

# Cummins

## Technical Operations



ENGINE MODEL: 6LTAA8.9-C300  
CURVE & DATASHEET: FR92945

REV 00 25Aug2008



Industrial Engine Performance Data

Basic Engine Model:  
**6LTAA8.9-C300**

**300 BHP (225kW) @ 2000 RPM**  
**1230 N.m @ 1400 RPM**

**FR92945**

Configuration  
**D563013CX03**

CPL Code  
**3158**

Revision  
**2008-8-25**

Compression Ratio: **16.6:1**

Bore: **114 mm**

Stroke: **145 mm**

Emission Certification: **SEPA STAGE II**

Aspiration: **Turbocharged and Charge Air Cooled**

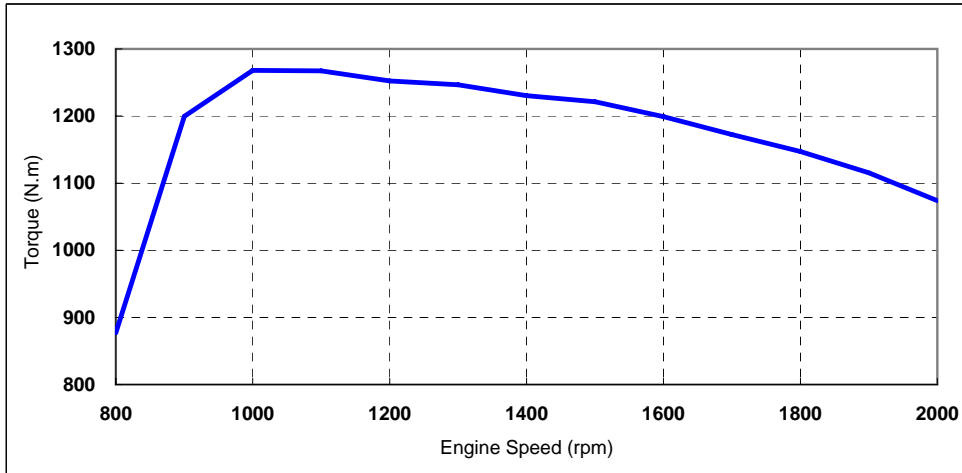
Displacement: **8.9 L**

No. of Cylinders: **6**

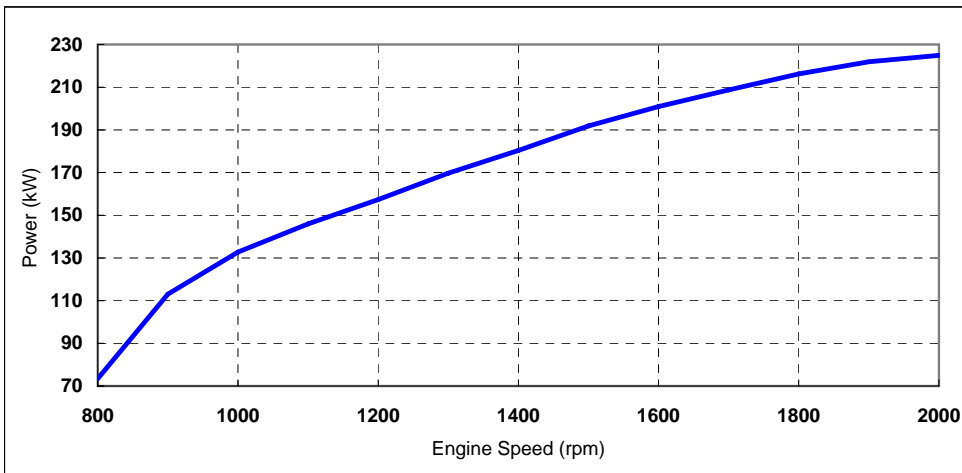
Fuel System: **WEIFU PW2000/RSV**

All data is based on the engine operating with fuel system, water pump, and 10 in H<sub>2</sub>O (2.488 kPa) inlet air restriction with 5.98 in (152 mm) 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.

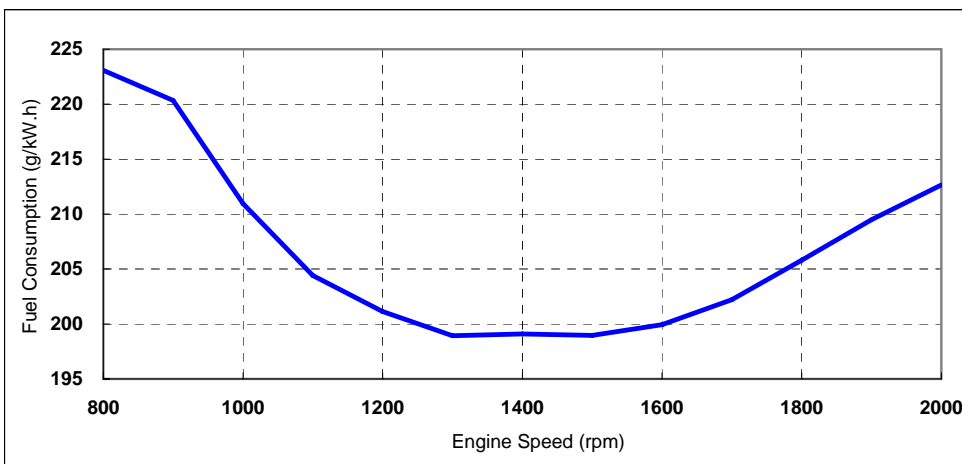
Performance curve



Torque Output	
rpm	N.m
800	877
1000	1268
1200	1252
1300	1247
1400	1230
1500	1221
1600	1199
1800	1147
2000	1074



Power Output	
rpm	kW
800	73
1000	133
1200	157
1300	170
1400	180
1500	192
1600	201
1800	216
2000	225



Fuel Consumption	
rpm	g/kW.h
800	223
1000	211
1200	201
1300	199
1400	199
1500	199
1600	200
1800	206
2000	213

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.2 diesel fuel. The engine may be operated without changing the fuel setting up to 4000 m (13,123 ft.) altitude. For sustained operation at high altitudes, the fuel rate of the engine will be adjusted to limit performance by 4% per 305 m (1,000 ft.) above 2255 m (7,400 ft.) altitude and 2% per 11°C above 38°C (1% per 10°F above 100°F).

**GENERAL ENGINE DATA**

Approximate Engine Weight (wet).....	-kg	650
Maximum overspeed capability.....	-rpm	3150
Mass Moment of Inertia of Rotating Components (No Flywheel).....	-kg·m <sup>2</sup>	0.72
Center of Gravity from Front Face of Block.....	-mm	427
Center of Gravity above Crankshaft Centerline.....	-mm	163

**ENGINE MOUNTING**

Maximum (Static) Bending Moment at Front Support Mounting Surface.....	-N.m	495
Maximum (Static) Bending Moment at Side Pad Mounting Surface.....	-N.m	250
Maximum (Static) Bending Moment at Rear Face of Block.....	-N.m	1356
Moment of Inertia of Complete Engine		
— Roll Axis.....	-kg·m <sup>2</sup>	29.8
— Pitch Axis.....	-kg·m <sup>2</sup>	76.8
— Yaw Axis.....	-kg·m <sup>2</sup>	66.9
Crankshaft Thrust Bearing Load Limit		
—Maximum Intermittent.....	-N	5338
—Maximum Continuous.....	-N	2670

**EXHAUST SYSTEM**

Maximum Back Pressure.....	-kPa	10.1
Exhaust Pipe Size Normally Acceptable.....	-mm	100
Maximum Static Supported Weight at the Turbocharger Outlet Flange.....	-N.m	14
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 intake manifold temperature at 25 deg C (77 F) ambient.....	-°C	60
Maximum Temperature Rise from Ambient to the Inlet of the Turbocharger. °C		17
Recommended intake piping size (inner diameter).....	-mm	125

**Charge Air Cooling System**

Maximum allowable pressure drop across charge air cooler and OEM CAC piping(IMPD):.....	-kPa	14
Maximum Intake Manifold Temperature Differential (Ambient to IMT) (IMTD) °C		35
Intake manifold air temperature derate/alarm temperature.....	-°C	96
Intake manifold temperature for Fan-ON.....	-°C	60

**LUBRICATION SYSTEM**

Normal Operating Oil Pressure Range		
— minimum low idle.....	-kPa	69
—maximum rated speed.....	-kPa	426
Maximum oil pressure spike on cold engine.....	-kPa	690
Maximum Lube Oil Flow for Engine Accessories.....	-litre/min.	7.6
Maximum Sump Oil Temperature.....	-°C	138
Minimum Required Lube System Capacity - Sump plus Filters.....	-litre	27.6
By-pass Filtration Required.....	-Yes/No	Yes
Angularity of Standard Oil Pan: (Values stated are for intermittent operation only):		
— Front Down.....	- °	45
— Front Up.....	- °	45
— Side to Side.....	- °	45

**Cooling System**

Minimum operating block coolant temperature.....	-°C	71
Minimum fill rate.....	-litre/min.	19
Maximum initial fill time.....	-min.	5
Minimum water pump inlet pressure with non-deaerating or partially deaerating cooling system.....	-kPa	0
Maximum static head of coolant above crankshaft centerline.....	-m	1
Minimum pressure cap rating at sea level.....	-kPa	34
Maximum pressure cap rating at sea level.....	-kPa	103
Minimum coolant expansion space (% of system capacity).....	- %	6
Maximum deaeration time.....	-min.	25
Minimum drawdown (% total cooling system capacity).....	- %	11
Full ON Fan engine coolant outlet temperature.....	-°C	93.3
Shutter opening temperature - coolant.....	-°C	85
Shutter opening temperature - intake manifold air (CAC).....	-°C	60
Coolant capacity - engine only.....	-litre	11.1
Maximum coolant operating temperature at engine outlet (max. top tank temp):	-°C	100
Standard (modulating) Thermostat Range.....	-°C	82-93
Maximum coolant temperature for engine protection controls.....	-°C	113
Maximum recommended external coolant flow restriction in engine circuit:.....	-kPa	34

**CRANKING SYSTEM**

Minimum Battery Capacity - Cold Soak at 0°F (-18°C) or Above	12V	24V
— Engine Only - Cold Cranking Amperes.....	-CCA	1500 750
— Engine Only - Reserve Capacity.....	-min.	360 180
Maximum Starting Circuit Voltage Drop.....	-Volts	TBD
Minimum Ambient Temperature for Unaided Cold Start.....	-°C(°F)	-12 (10)
Minimum Cranking Speed Required for Unaided Cold Start.....	-rpm	150
Maximum starting circuit resistance.....	-Ohm	0.00075 0.002

**Fuel System**

Maximum Fuel Flow on the Supply Side of the Fuel Pump.....	-kg/hr	315
Maximum fuel supply restriction at fuel pump inlet		
— with clean fuel filter element(s) at maximum fuel flow.....	-kPa	20
— with dirty fuel filter element(s) at maximum fuel flow .....	-kPa	34
Maximum fuel drain restriction (total head)		
— after (or with) check valve.....	-kPa	TBD
— before (or without) check valve.....	-kPa	69
Maximum fuel inlet temperature.....	-°C	60
Minimum fuel tank venting rate.....	-L/s	0.055



**EMISSIONS**

Estimated Free Field Sound Pressure Level At 15 m (50 ft.) and Full-Load Governed Speed  
(Excludes Noise from Intake, Exhaust, Cooling System and Driven Components)

—Right Side.....	-dBa	TBD
—Left Side.....	-dBa	TBD
—Front.....	-dBa	TBD
—Rear.....	-dBa	TBD

Gaseous Emissions per GB 20891-2007

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

**Performance Data**

Minimum low idle speed:.....	-rpm	700
Maximum Governed Speed (10% of Rated Torque) .....	-rpm	2260
Maximum altitude limit restriction		
—Continuous.....	-m	2200
Maximum torque available at closed throttle low idle speed.....	-N.m	450
Nominal governor regulation:.....	-%	≤8
Throttle Angle		
—High Idle.....	Deg.	103±10°
—Low Idle.....	Deg.	70±10°
—Delta.....	Deg.	33±5°
Throttle Angle at Engine Shutdown		
—Engine Work.....	Deg.	14±5°
—Engine Shutdown.....	Deg.	318±5°

Fuel Rating Option used for these Data: **FR92945**

Engine Speed.....	-rpm
Output Power.....	-kW
Torque.....	-N.m
Friction Horsepower.....	-kW
Intake Manifold Pressure.....	-kPa
Turbo Comp. Outlet Pressure.....	-kPa
Turbo Comp. Outlet Temperature.....	-°C
Inlet Air Flow .....	-kg/min
Exhaust Gas Flow .....	-l/s
Exhaust Gas Temperature.....	-°C
Heat Rejection to Ambient.....	-kW
Heat Rejection to Coolant.....	-kW
Steady State Smoke.....	-FSN

Rated Power	Maximum Power	Torque Peak
2000		1400
225		180
1074		1230
TBD		TBD
181		153
193		158
202		174
22		14.8
681		467
440		455
TBD		TBD
TBD		TBD
1.5		1.8

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.