

# Cummins 4BTA3.9- C125 Engine



ENGINE MODEL: 4BTA3.9-C125





Basic Engine Model:  
**4BTA3.9-C125**

**125 BHP (93kW) @ 2200 RPM**  
**475 N·m @ 1500 RPM**

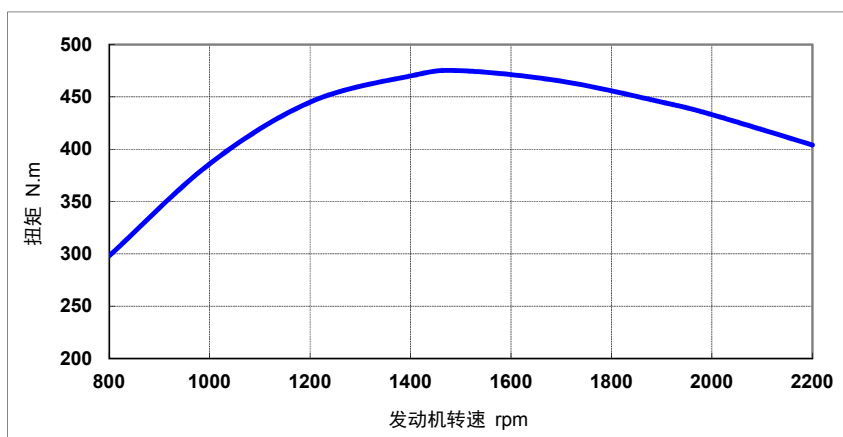
Configuration  
**D383055CX02**

Compression Ratio: **17.3:1**  
Bore: **102 mm**  
Stroke: **120 mm**  
Application:

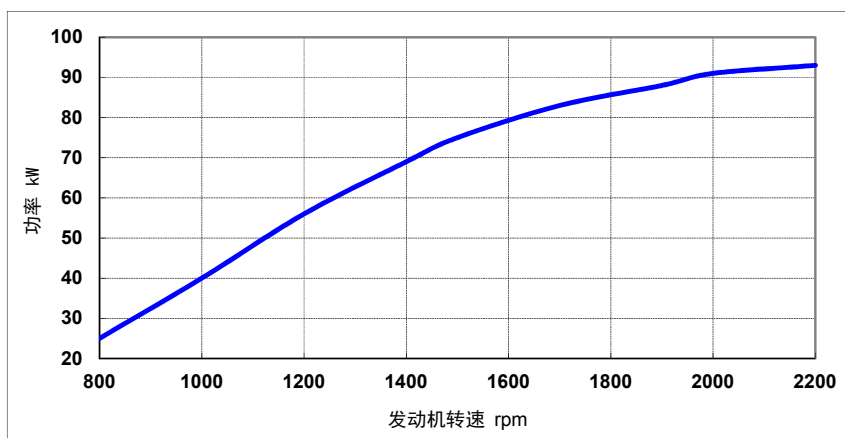
Aspiration: **Turbocharged and Charge Air Cooled**  
Displacement: **3.9 L**  
No. of Cylinders: **4**  
Fuel System: **WEIFU PW2000/RQV-K**

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, and with 3.0 in Hg (10 kPa) exhaust restriction not included are alternator, fan, optional equipment and driven components.

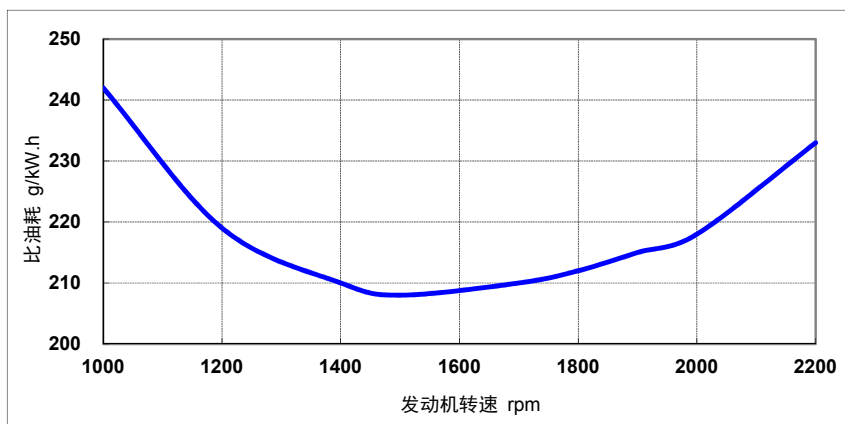
### Performance curve



Torque Output	
rpm	N.m
800	298
1000	386
1200	445
1400	470
1500	475
1700	465
1900	445
2000	433
2200	404



Power Output	
rpm	kW
800	25
1000	40
1200	56
1400	69
1500	75
1700	83
1900	88
2000	91
2200	93



Fuel Consumption	
rpm	g/kW.h
1000	242
1200	219
1400	210
1500	208
1700	210
1800	212
1900	215
2000	218
2200	233

Curves shown above represent gross engine performance capabilities obtained and corrected in accordance with GB/T18297 conditions of 100kPa (29.61 in. Hg) barometric press, 298K (77°F) inlet air temperature, and 1kPa (0.30 in.Hg) water vapor pressure.

## GENERAL ENGINE DATA

Approximate Engine Weight (wet).....	-kg	355
Mass Moment of Inertia of Rotating Components (No Flywheel).....	-kg·m <sup>2</sup>	0.143
Center of Gravity from Front Face of Block.....	-mm	391
Center of Gravity above Crankshaft Centerline.....	-mm	160

## ENGINE MOUNTING

Maximum (Static) Bending Moment at Front Support Mounting Surface.....	-N.m	435
Maximum (Static) Bending Moment at Side Pad Mounting Surface.....	-N.m	TBD
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>	11.1
— Pitch Axis.....	-kg·m <sup>2</sup>	19.1
— Yaw Axis.....	-kg·m <sup>2</sup>	14.7
Crankshaft Thrust Bearing Load Limit		
—Maximum Intermittent.....	-N	3425
—Maximum Continuous.....	-N	1112

## EXHAUST SYSTEM

Maximum Back Pressure.....	-kPa	10
Exhaust Pipe Size Normally Acceptable.....	-mm	75
Maximum Static Supported Weight at the Turbocharger Outlet Flange.....	-N.m	13.5
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 Temperature Rise from Ambient to the Inlet of the Turbocharger.....	-°C	17
Maximum Pressure Drop from the Turbocharger Outlet to the Intake Manifold..	-mm Hg	TBD

## Charge Air Cooling System

Maximum allowable pressure drop across charge air cooler and OEM CAC piping(IMPD):.....	-kPa	13
Maximum intake manifold temperature at 25 deg C (77 F) ambient.....	-°C	50
Maximum Intake Manifold Temperature Differential (Ambient to IMT) (IMTD):..	-°C	25
Intake manifold air temperature for Fan-ON.....	-°C	50

## LUBRICATION SYSTEM

Normal Operating Oil Pressure Range		
— minimum low idle.....	-kPa	69
—maximum rated speed.....	-kPa	345
Maximum Lube Oil Flow for Engine Accessories.....	-litre/min.	4.0
Maximum Sump Oil Temperature.....	-°C	127
Minimum Required Lube System Capacity - Sump plus Filters.....	-litre	9.0
By-pass Filtration Required.....	-Yes/No	No
Angularity of Standard Oil Pan: (Values stated are for intermittent operation only):		
— Front Down.....	-°	45
— Front Up.....	-°	45
— Side to Side.....	-°	45

## COOLING SYSTEM

Coolant Capacity - Engine Only.....	-litre	8.3
Maximum Engine Cooling Circuit External Resistance.....	-kPa	34
Minimum Pump Inlet Pressure with Open Thermostat and no Pressure Cap.....	-kPa	TBD
Maximum Static Head of Coolant Above Engine Crankshaft Centerline.....	-m	TBD
Standard (modulating) Thermostat Range.....	-°C	82-93
Maximum Block Coolant Pressure with Closed Thermostat and no Pressure Cap.....	-kPa	TBD
Minimum Pressure Cap.....	-kPa	50
Maximum Engine Coolant Temperature at Engine Outlet.....	-°C	100
Maximum Engine Coolant Temperature for Engine Protection Devices.....	-°C	TBD
Minimum Engine Coolant Temperature.....	-°C	71
Minimum Fill Rate.....	-liter/min	19
Maximum Initial Fill Time.....	-min	5
Minimum Coolant Expansion Space (% of System Capacity) .....	-%	6
Maximum Deaeration Time.....	-min	25
Minimum Drawdown (% of System Capacity) .....	-%	11
(Drawdown Must Exceed the Volume Not Filled at Initial & Must Not include Expansion Space)		
Fan-on Engine Coolant Outlet Temperature.....	-°C	93
Shutter Opening Coolant Outlet Temperature.....	-°C	85
Shutter Opening Intake Manifold Air Temperature.....	-°C	66

## CRANKING SYSTEM

Minimum Battery Capacity - Cold Soak at 0°F (-18°C) or Above	12V	24V
— Engine Only - Cold Cranking Amperes.....	-CCA	800 400
— Engine Only - Reserve Capacity.....	-min.	160 80
Maximum Starting Circuit Voltage Drop.....	-Volts	TBD
Minimum Ambient Temperature for Unaided Cold Start.....	-°C(°F)	0 32
Minimum Cranking Speed Required for Unaided Cold Start.....	-rpm	125
Maximum starting circuit resistance.....	-Ohm	TBD
Power of start motor.....	-kW	

## FUEL SYSTEM

Maximum Fuel Flow on the Supply Side of the Fuel Pump.....	-kg/hr	193
Maximum fuel supply restriction at fuel pump inlet		
— with clean fuel filter element(s) at maximum fuel flow.....	-kPa	14
— with dirty fuel filter element(s) at maximum fuel flow .....	-kPa	27
Maximum fuel drain restriction (total head)		
— after (or with) check valve.....	-kPa	TBD
— before (or without) check valve.....	-kPa	66
Maximum fuel inlet temperature.....	-°C	71
Minimum fuel tank venting rate.....	-litre/hr	340

## NOISE

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

## PERFORMANCE DATA

Minimum low idle speed:.....	-rpm	950
Maximum Governed Speed (10% of Rated Torque) .....	-rpm	2457
Maximum altitude limit restriction		
—Continuous.....	-m	2000
Maximum torque available at closed throttle low idle speed.....	-N.m	217
Nominal governor regulation:.....	-%	≤10
Throttle Angle		
—High Idle.....	Deg.	67±10°
—Low Idle.....	Deg.	71±10°
—Delta.....	Deg.	42±5°
Throttle Angle at Engine Shutdown		
—Engine Work.....	Deg.	66±5°
—Engine Shutdown.....	Deg.	67±5°

Fuel Rating Option used for these Data: **FR93936**

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 .....	-litre/sec
Exhaust Gas Flow .....	-litre/sec
Exhaust Gas Temperature.....	-°C
Heat Rejection to Ambient.....	-kW
Heat Rejection to Coolant.....	-kW
Steady State Smoke.....	-FSN

Rated Power	Maximum Power	Torque Peak
2200		1500
93		75
404		475
TBD		TBD
133		112
137		115
TBD		TBD
104		71
315		210
560		520
TBD		TBD
TBD		TBD
1		0.8

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.