

Cummins 4BT3.9- C100 Engine



ENGINE MODEL: 4BT3.9-C100





Basic Engine Model:
4BT3.9-C100

100 BHP (75kW) @ 2400 RPM
330 N-m @ 1500 RPM

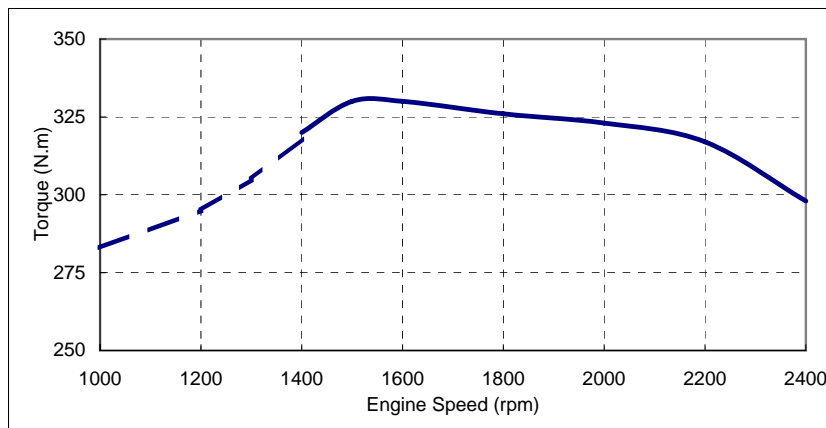
Configuration
D382043CX02

Compression Ratio: **17.3:1**
Bore: **102 mm**
Stroke: **120 mm**
Emission Certification:

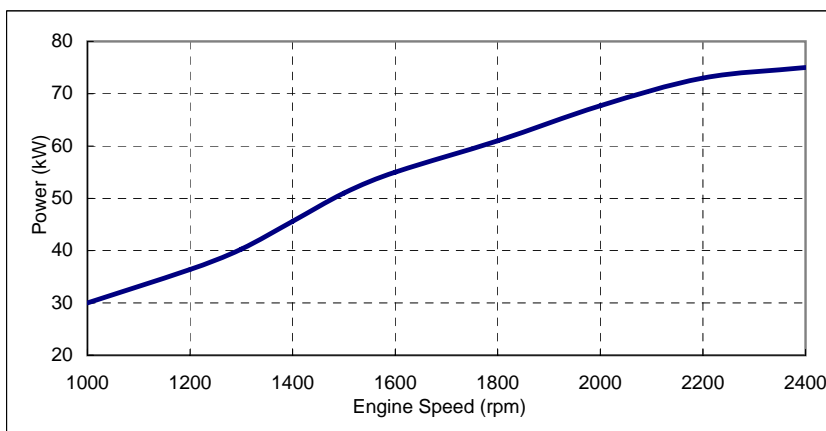
Aspiration: **Turbocharged**
Displacement: **3.9 L**
No. of Cylinders: **4**
Fuel System: **WEIFU A/RSV 8%Governor Regulation**

All data is based on the engine operating with fuel system, water pump, and 10 in H₂O (2.488 kPa) inlet air restriction with 5.98 in (152mm) 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.

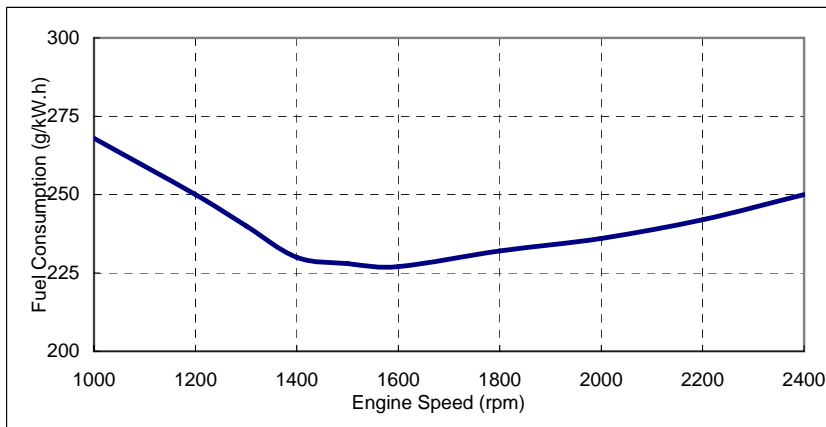
Performance curve



Torque Output	
rpm	N.m
1000	283
1200	290
1300	296
1400	320
1500	330
1600	330
1800	326
2000	323
2200	317
2400	298



Power Output	
rpm	kW
1000	30
1200	36
1300	40
1400	46
1500	51
1600	55
1800	61
2000	68
2200	73
2400	75



Fuel Consumption	
rpm	g/kW.h
1000	268
1200	250
1300	240
1400	230
1500	228
1600	227
1800	232
2000	236
2200	242
2400	250

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 2200 m (7,218 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 (NET).....	-kg	338
Mass Moment of Inertia of Rotating Components (No Flywheel).....	-kg·m ²	0.143
Center of Gravity from Front Face of Block.....	-mm	262
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 ²	11.1
— Pitch Axis.....	-kg·m ²	19.1
— Yaw Axis.....	-kg·m ²	14.7

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

LUBRICATION SYSTEM

Normal Operating Oil Pressure Range.....	-kPa	276 - 345
Maximum Lube Oil Flow for Engine Accessories.....	-litre/min.	4.0
Maximum Sump Oil Temperature.....	-°C	121
Minimum Engine Oil Pressure for Engine Protection Devices:		
— At Rated Speed and Load.....	-kPa	276
— At Torque Peak Speed and Load.....	-kPa	207
— At Low Idle.....	-kPa	69
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	7.9
Maximum Engine Cooling Circuit External Resistance.....	-kPa	TBD
Minimum Pump Inlet Pressure with Open Thermostat and no Pressure Cap.....	-mmHg	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	101.6
Minimum Engine Coolant Temperature.....	-°C	71
Minimum Fill Rate.....	-litre/min.	19
Maximum Initial Fill Time.....	-min.	5
Minimum Coolant Expansion Space.....	- %of System Capacity	6
Maximum Deaeration Time.....	-min.	25
Minimum Drawdown.....	— % of Total System Capacity	11
(Drawdown Must Exceed the Volume Not Filled at Initial Fill & 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	N/A

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 @ ---Amperes.....	-Volts	TBD
Minimum Ambient Temperature for Unaided Cold Start.....	-°C(-°F)	-12
Minimum Cranking Speed Required for Unaided Cold Start.....	-rpm	125
Breakaway Torque at Minimum Unaided Start Temperature.....	-N.m(lb.-ft.)	TBD
Cranking Torque at Minimum Unaided Start Temperature.....	-N.m(lb.-ft.)	TBD
Cranking Torque at -10°F.....	-N.m(lb.-ft.)	TBD

FUEL SYSTEM

Maximum Fuel Flow on the Supply Side of the Fuel Pump.....	-litre/hr	97
Maximum Fuel Inlet Restriction		
— with clean fuel filter.....	-kPa	14
— with dirty fuel filter.....	-kPa	27
Maximum Fuel Drain Restriction		
— with check valves.....	-kPa	TBD
— less check valves.....	-kPa	68
Maximum Fuel Inlet Temperature.....	-°C	71
Minimum Fuel Tank Air Venting Capability Required at 6 in. H ₂ O Back Pressure..	-litre/hr	340

PERFORMANCE DATA

Minimum low idle speed:.....	-rpm	750
Maximum Governed Speed (10% of Rated Torque)	-rpm	2600
Maximum overspeed capability.....	-rpm	3750
Maximum altitude limit restriction		
—Continous.....	-m	TBD
Maximum torque available at closed throttle low idle speed.....	-N.m	TBD
Throttle Angle		
—High Idle.....	Deg.	102±4°
—Low Idle.....	Deg.	75±4°
—Delta.....	Deg.	27°
Crankshaft Thrust Bearing Load Limit		
—Maximum Intermittent.....	-N	3425
—Maximum Continuous.....	-N	1112

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

Fuel Rating Option used for these Data: **FR91468**

	Rated Power	Maximum Power	Torque Peak
Engine Speed.....	2400		1500
Output Power.....	75		51
Torque.....	298		330
Intake Manifold Pressure.....	90		45
Friction Horsepower.....	16.6		7
Turbocharger Compressor Outlet Pressure.....	90		45
Inlet Air Flow	120		68
Exhaust Gas Flow	283		182
Turbo Comp. Outlet Temperature.....	TBD		TBD
Exhaust Gas Temperature.....	550		560
Heat Rejection to Ambient.....	10.9		8
Heat Rejection to Coolant.....	50		36
Heat Rejection to Fuel.....	1.0		0.6
Engine Coolant Flow.....	3.3		2.0
External Cooling Circuit Resistance.....	15.2		15.2
Altitude Limitations:			
—Intermittent.....	TBD		TBD
—Continuous.....	TBD		TBD
Steady State Smoke.....	TBD		TBD

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.