

Cummins 6BT5.9- C150 Engine



ENGINE MODEL: 6BT5.9-C150





Basic Engine Model:
6BT5.9-C150

150 BHP (110kW) @ 2500 RPM
565 N-m @ 1500 RPM

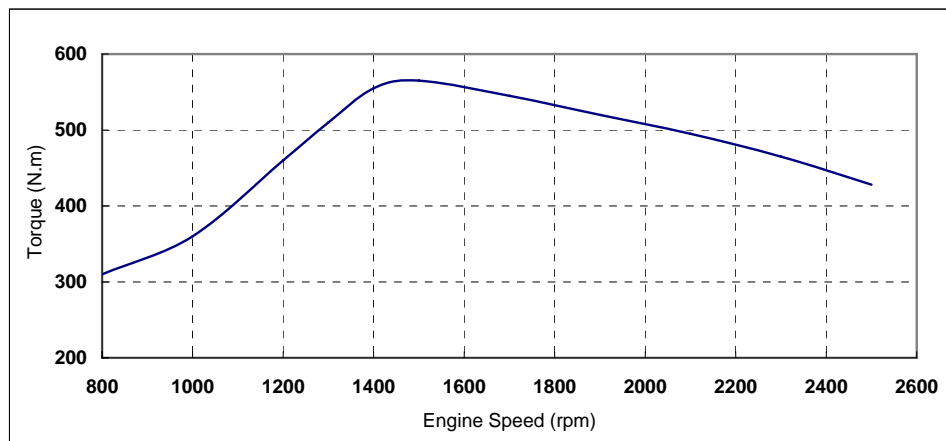
Configuration
D402056CX02

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

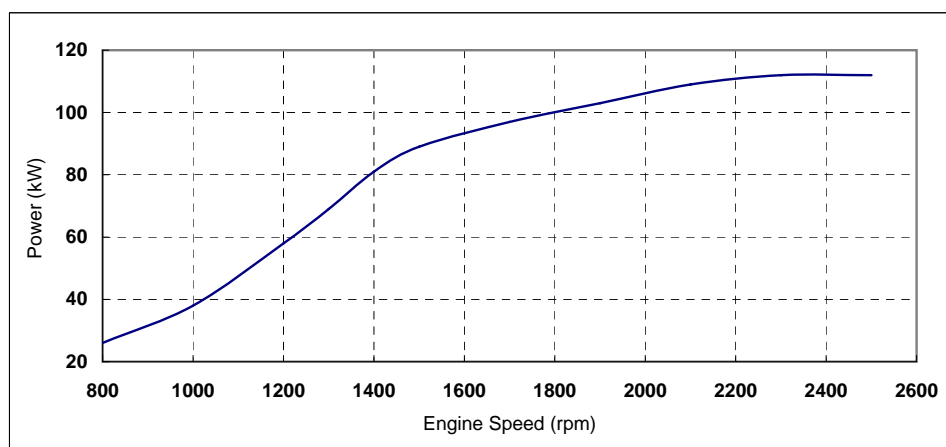
Aspiration: **Turbocharged**
Displacement: **5.9 L**
No. of Cylinders: **6**
Fuel System: **WEIFU A/RSV 8%Governor Regulation**

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.

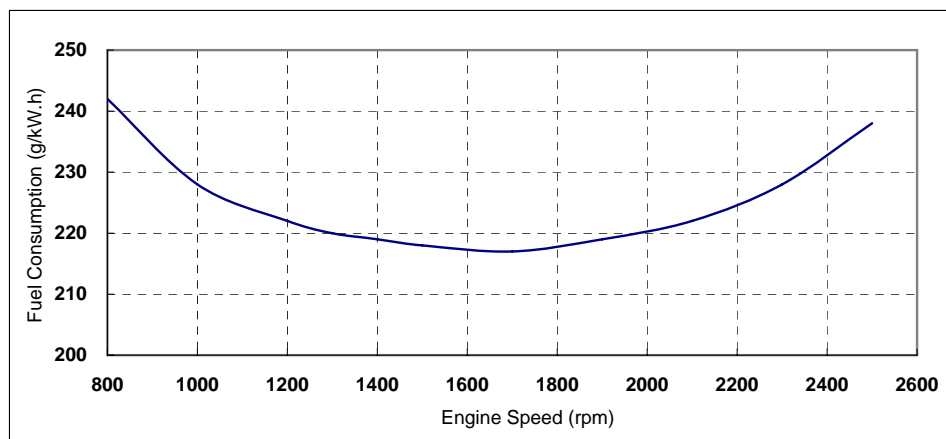
Performance curve



| Torque Output | |
|---------------|-----|
| rpm | N.m |
| 800 | 310 |
| 1000 | 360 |
| 1200 | 460 |
| 1300 | 510 |
| 1400 | 555 |
| 1500 | 565 |
| 1700 | 545 |
| 1900 | 520 |
| 2100 | 495 |
| 2300 | 465 |
| 2500 | 428 |



| Power Output | |
|--------------|-----|
| rpm | kW |
| 800 | 26 |
| 1000 | 38 |
| 1200 | 58 |
| 1300 | 69 |
| 1400 | 81 |
| 1500 | 89 |
| 1700 | 97 |
| 1900 | 103 |
| 2100 | 109 |
| 2300 | 112 |
| 2500 | 112 |



| Fuel Consumption | |
|------------------|--------|
| rpm | g/kW.h |
| 800 | 242 |
| 1000 | 228 |
| 1200 | 222 |
| 1300 | 220 |
| 1400 | 219 |
| 1500 | 218 |
| 1700 | 217 |
| 1900 | 219 |
| 2100 | 222 |
| 2300 | 228 |
| 2500 | 238 |

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 | 432 |
| Mass Moment of Inertia of Rotating Components (No Flywheel)..... | -kg·m ² | 0.25 |
| Center of Gravity from Front Face of Block..... | -mm | 391 |
| Center of Gravity above Crankshaft Centerline..... | -mm | 140 |
| Crankshaft Thrust Bearing Load Limit | | |
| —Maximum Intermittent..... | -N | 3425 |
| —Maximum Continuous..... | -N | 1112 |

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 | 16.5 |
| — Pitch Axis..... | -kg·m ² | 41.1 |
| — Yaw Axis..... | -kg·m ² | 35.4 |

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-mmHg | | TBD |

LUBRICATION SYSTEM

| | | |
|--|-------------|----------|
| Normal Operating Oil Pressure Range..... | -kPa | 69 - 345 |
| Maximum Lube Oil Flow for Engine Accessories..... | -litre/min. | 4.0 |
| Maximum Sump Oil Temperature..... | -°C | 127 |
| 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 | 16.3 |
| 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 | 9.9 |
| Maximum Engine Cooling Circuit External Resistance..... | -kPa | 34 |
| 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 | 276 |
| 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..... | - % | 6 |
| Maximum Deaeration Time..... | -min. | 25 |
| Minimum Drawdown..... | - % | 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 | 65.5 |

CRANKING SYSTEM

| | | |
|--|---------------|----------|
| Minimum Battery Capacity - Cold Soak at 0°F (-18°C) or Above | 12V | 24V |
| — Engine Only - Cold Cranking Amperes..... | -CCA | 950 475 |
| — Engine Only - Reserve Capacity..... | -min. | 260 130 |
| Maximum Starting Circuit Voltage Drop @ ---Amperes..... | -Volts | TBD |
| Minimum Ambient Temperature for Unaided Cold Start..... | -°C (-°F) | -12 (10) |
| 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..... | -kg/hr | 193 |
| 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 |

Fuel System Can With the Fuel Pump Solenoid:

- no the fuel pump soledoid: FP90286, fuel pump outline drawing ref. 3974629
- with the fuel pump soledoid: FP90287, fuel pump outline drawing ref. 3975421

PERFORMANCE DATA

| | | |
|---|------|--------|
| Minimum low idle speed:..... | -rpm | 750 |
| Maximum Governed Speed (10% of Rated Torque) | -rpm | 2700 |
| Maximum Overspeed Capability..... | -rpm | 3750 |
| Maximum altitude limit restriction | | |
| —Continuous..... | -m | 3000 |
| 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° |
| Throttle Angle at Engine Shutdown | | |
| —Engine Work..... | Deg. | 94±4° |
| —Engine Shutdown..... | Deg. | 32±4° |
| 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: **FR91474**

| | Rated Power | Maximum Power | Torque Peak |
|--|-------------|---------------|-------------|
| Engine Speed..... | 2500 | | 1500 |
| Output Power..... | 112 | | 89 |
| Torque..... | 428 | | 565 |
| Intake Manifold Pressure..... | 115 | | 80 |
| Friction Horsepower..... | 24 | | 11 |
| Turbocharger Compressor Outlet Pressure..... | 120 | | 83 |
| Inlet Air Flow | 216 | | 135 |
| Exhaust Gas Flow | 540 | | 310 |
| Turbo Comp. Outlet Temperature..... | 140 | | 110 |
| Exhaust Gas Temperature..... | 480 | | 510 |
| Heat Rejection to Ambient..... | TBD | | TBD |
| Heat Rejection to Coolant..... | 92 | | 53.6 |
| Heat Rejection to Fuel..... | 0.8 | | 0.3 |
| Engine Coolant Flow..... | 3.4 | | 2.0 |
| External Cooling Circuit Resistance..... | TBD | | TBD |
| Altitude Limitations: | | | |
| —Intermittent..... | 3500 | | 3500 |
| —Continuous..... | 3000 | | 3000 |
| Steady State Smoke..... | 1.5 | | 2.0 |

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.