



# Diesel generator set C90 D5

50 Hz



## Made by Cummins®

Cummins commercial diesel generator sets integrate the universal design, production and testing standard of Cummins, providing fully reliable and integrated power generation systems with optimum performance for applications in Standby power, Prime Power and Continuous operation.

In accordance with the standard of ISO8528-2005 and GB/T2820-2009 AC Generator Sets Driven by Reciprocating Internal Combustion Engine.

Certified to ISO9001 and ISO9002 for generator set design and manufacture.

Cummins provides full quality assurance and is responsible for the warranty of generator sets including engine, alternator and control system.

National specialized service network ensures 24 hours after-sale service and the supply of parts and accessories.

## Standard features of generator set

**Engine:** Cummins 6B series engine.

Type: Four-stroke, water cooled, turbocharged.

Structure: Cast steel crankshaft, connecting rod, cast iron cylinder block.

Cooling system: Built-in water circulating pump and thermostat improves working efficiency of engine.

Filter: Cummins Fleetguard series high-precision filter.

**Alternator:** Stamford UC series alternator.

Type: Revolving magnetic field, single bearing, 4 pole, brushless, drip proof structure, in accordance with GB755, BS5000, and IEC34-1.

Stator: Taper slot structure, 2/3 pitch windings, effectively suppressing waveform distortion of third harmonic current and output voltage under non-linear load.

Rotor: Flexible driving disc connected to engine directly, perfect damper winding reduces parallel oscillation.

Cooling system: Directly drive centrifugal blower fan.

**Control system:** PowerCommand® control system based on microprocessor.

**Short-circuit protection:** Schneider breaker, AmpSentry™ patent protection, PowerCommand controller.

**Base frame:** Bolted steel base frame with A/V mounting, complex seismic structure and bottom oil tank.

**Radiator:** Standard genset mounted radiator.

**Standard accessories:** Exhaust elbow, exhaust bellows, exhaust silencer, etc.

Genset model	Standby power		Prime power		Engine	Alternator	Control system
	kVA	kW	kVA	kW			
C90 D5	90	72	82	65	6BT5.9-G1	UCI224G	PC1.1

230/400 VAC, 50 Hz, 0.8 PF (lagging) 3 phase

## Generator set specifications

	Standby	Prime
Voltage regulation (no load to full load)	±1%	
Steady-state voltage variation	±1%	
Frequency regulation (no load to full load)	1.46%	
Steady-state frequency variation	±0.25%	
EMC compatibility	BS EN61000-6-4/BS EN61000-6-2	
Fuel consumption, g/kw-h (L/hr) @ 100% load	210 (23.4)	208 (21.7)
Battery starting capacity, A/hr	100*2	
Total coolant capacity (with engine and water tank), L	34	
Bottom oil tank capacity, L	200	

## Engine specifications

Model	6BT5.9-G1
Configuration	Cast iron, in-line, 6-cylinder
Displacement, L	5.9
Compression ratio	17.3:1
Aspiration	Turbocharged
Fuel system	Direct injection
Bore* stroke, mm	102*120
Rated speed, rpm	1500
Governor type	Mechanical
Starting voltage	24 V, negative ground
Battery charging alternator	24 V, 40 A
Cold starting current, CCA	400 (-12°C)
Lube oil capacity, L	16
Combustion air (Standby), m <sup>3</sup> /s	0.1
Coolant capacity, L	8
Maximum fuel flow, L/hr	30
Maximum fuel inlet resistance, mm Hg	102

## Alternator specifications

Protection class	IP23
Insulation system	Class H
Standard temperature rise	Standby, 150°C (at 40°C ambient temperature)
Exciting type	Self-exciting
AC waveform Total Harmonic Distortion (THDV)	<1.5% no load, <5% 3-phase balanced linear load
Telephone Influence Factor (TIF)	<50 (per NEMA MG1-22.43)
Telephone Harmonic Factor (THF)	<2%

## Exhaust specifications

	Standby	Prime
Exhaust gas flow at rated load, L/S	271	252
Exhaust gas temperature, °C	510	480
Maximum exhaust backpressure, kPa	10	

## Cooling system specifications

Radiator ambient design, °C	50
Minimum air inlet (outlet) area, m <sup>2</sup>	0.87 (0.7)
Radiator tank capacity, L	26
Radiator cooling air flow (Standby), m <sup>3</sup> /s	3.8
Total heat rejection, kW	21.6
Maximum cooling air flow static resistance, Pa	124.5

## The PowerCommand 1.1

### Generator set control

- The PowerCommand 1.1 control is a microprocessor based generator set monitoring control system. The control provides a simple operator interface to the generator set, digital voltage regulation, digital engine speed governing, start/stop control, and protective functions.
- The PowerCommand 1.1 generator set control is suitable for use on a wide range of generator sets in non-parallel applications.
- The PowerCommand control can be configured for any frequency, voltage and power configuration from 120 to 600 VAC for 50 Hz or 60 Hz operation.
- Power for the control is derived from the generator set starting batteries. The control functions over a voltage range from 8 VDC to 35 VDC.

### Major features

- **12 or 24 VDC battery operation**
- **Digital voltage regulation full wave rectified single phase (Line to Line) sensing.**
- **Engine starting includes relay drivers for start, Fuel Shut Off (FSO), and glow plug.**
- **Configurable Inputs and Outputs.** Two discrete inputs and two dry contact relay outputs.
- **Generator Set Monitoring:** Displays status of all critical engine & alternator generator set functions.
- **Smart Starting Control System:** Integrated fuel ramping to limit black smoke & frequency overshoot.
- **Advanced Serviceability using INPOWER™.**

### Control system

Includes all functions to locally or remotely start and stop, and protect the generator set.

#### Control Switch - RUN/OFF/AUTO

- OFF mode - the generator set is shut down & cannot be started; as well as resets faults.
- RUN mode - the generator set will execute its start sequence.
- AUTO mode - the generator set can be started with a start signal from a remote device.

### Status indications

The control has a lamp driver for external fault/status indication.

Functions include:

- The lamp flashes during preheat (when used) and while the generator set is starting.
- **READY TO LOAD** - flashing until the set is at rated voltage and frequency, then on continuously.
- Fault conditions are displayed by flashing a two-digit fault code number.

**LED Indicating Lamps** - includes LED indicating lamps for the following functions:

- Not in auto
- Remote start
- Warning
- Shutdown
- Auto
- Run

Remote emergency stop switch input. Immediate shut down of the generator set on operation.

#### Base Engine Protection -

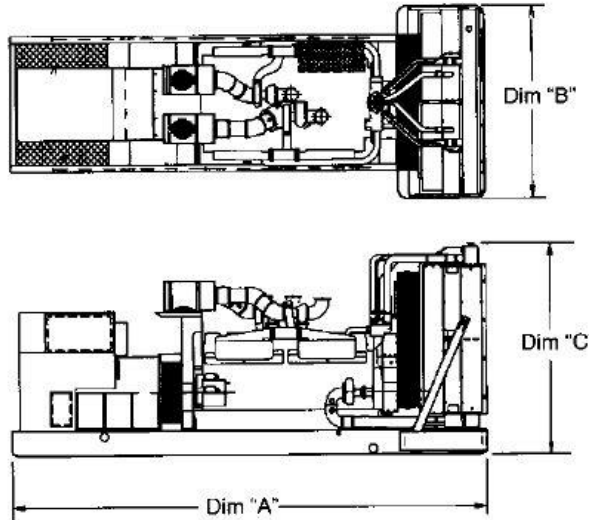
- Low oil pressure shutdown
- High engine temperature shutdown
- Underspeed/sensor fail shutdown
- Fail to start
- Battery charging alternator fail warning



## Standard generator set

Model	Dim 'A' (mm)	Dim 'B' (mm)	Dim 'C' (mm)	Weight* dry weight (kg)
C90 D5	2284	1050	1553	1442

## Standard outline drawings of generator set



The outlines are for illustrative e purposes only, not used for installation design.

Please refer to genset outline drawing for exact representation of this model for installation design.

### Ratings definitions:

#### Emergency Standby Power (ESP):

Applicable for supplying power to varying electrical load for the duration of power interruption of a reliable utility source. Emergency Standby Power (ESP) is in accordance with GB.T2820/ISO 8528. The effective oil limited power is in accordance with ISO 3046, AS 2789, DIN 6271 and BS 5514.

#### Limited-Time Running Power (LTP):

Applicable for supplying power to a constant electrical load for limited hours. Limited-Time Running Power (LTP) is in accordance with GB.T2820/ISO 8528.

#### Prime Power (PRP):

Applicable for supplying power to varying electrical load for unlimited hours. Prime Power (PRP) is in accordance with GB.T2820/ISO 8528. A 10% overload capability is available in accordance with ISO 3046, AS 2789, DIN 6271 and BS 5514.

#### Base Load (Continuous) Power (COP):

Applicable for supplying power continuously to a constant electrical load for unlimited hours. Continuous Power (COP) is in accordance with GB.T2820/ISO 8528, ISO 3046, AS 2789, DIN 6271 and BS 5514.

For more information contact your local Cummins distributor or visit [power.cummins.com](http://power.cummins.com)

Our energy working for you.™

