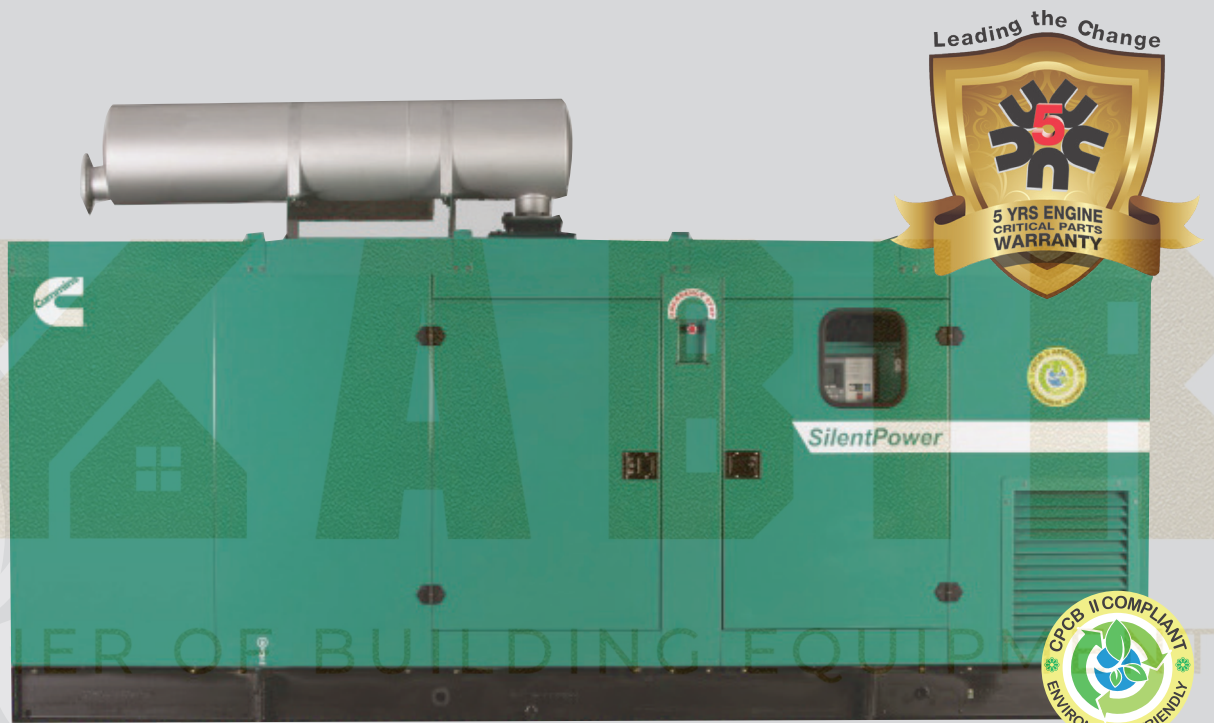




# Diesel Generator Set QSL9 Series

275-320 kVA, 220-256 kW Prime



## **Latest Technology Product with Global Cummins® Platform**

- The Cummins® QSL9 series heavy-duty engine and world class Stamford alternator powered diesel generator set
- Class defining Quantum engine technology with fully integrated subsystems
- Full Authority Electronic Engine
- Advanced in-cylinder technology to meet latest emission norms without any after-treatment device
- Smart aesthetic and superior finish
- Compact in size with optimum power to weight ratio

## **Environment Friendly Power**

- Class defining technology engine is designed to meet stringent exhaust emission tests as per revised MoEF norms, thus offering environment friendly power.
- The Cummins® diesel generator sets are available with the lowest noise levels in its range

## **Lowest Operating Cost and Comprehensive Warranty**

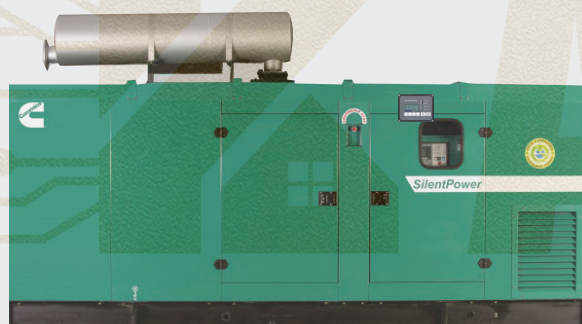
- Highly reliable and durable product
- All elements are designed to work together to maximize efficiency even at part loads, offering the advantage of lowest operating costs
- 500 Hours/ 1 year service interval
- Industry acknowledged best-in-class comprehensive warranty on the entire package including rubber components

## **Single Source Power Assurance**

- All the major components – the engine, alternator, control system and canopy are designed, manufactured and tested by Cummins India
- Best and Largest customer support network in India, capable of providing round-the-clock service and spares support
- All these things put together, Cummins® offers you SINGLE SOURCE POWER ASSURANCE

## Engine

- Cummins® QSL9 series, 6 cylinder, In-line 4 stroke, radiator cooled engine
- Full Authority Electronic Engine
- Well designed air handling system with
  - Dry type, replaceable paper element air cleaner with restriction indicator
  - Air to air aftercooling
  - Optimised turbocharger for increased altitude capabilities
- Best in class fuel economy with
  - Bosch HPCR fuel system with A1 class electronic governing
  - Dual fuel filter system: Pre filter including water separator and Water In Fuel (WIF) sensor and main filter
- Electrical lift pump for faster response
- Standard integral set-mounted radiator system, designed and tested for 50°C ambient temperature
- Full flow spin on lube oil filter
- Plate type lube oil cooler
- First fill of lube oil and coolant
- Electrical starter motor with soft start engagement feature
- Battery charging alternator
- 2 x 12 V DC batteries



## Alternator

- Stamford HC4 alternator frames from Cummins Generator Technologies
- Brushless type, Screen protected, Revolving field, Self excited alternator conforming to IS/IEC 60034-1
- 3 Phase reconnectable winding with 12 terminals brought out for connection
- Better motor starting capability
- Best in class efficiency
- Compact design with sealed bearings for longer life and lesser maintenance
- Impregnation on all wound components for better mechanical strength

## Control Panel

Control panel is manufactured with 14/16 gauge CRCA sheet and is powder coated for weather-proof and long lasting finish. The control panel consists of the following parts:

- PowerCommand® 1.1 Controller
- Aluminum bus bars with suitable capacity with incoming/outgoing terminals
- Indicating lamps for 'Load ON' and 'Set Running'
- Instrument fuses duly wired and ferruled
- MCCB of suitable rating with overload and short circuit protections

## PowerCommand 1.1

### Features

The PowerCommand® control system is a microprocessor based generator set monitoring, metering and control system with LCD display designed to meet the demands of today's engine driven generator sets



- Intuitive operator interface which includes LED backlit LCD display with tactile feel soft-switches & generator set status LED lamps
- Digital AVR for shunt or PMG excitation with torque matching
- Digital electronic governing with temperature compensation and smart starting
- SAE J1939 interface to Full Authority Electronic (FAE) engines
- Remote start-stop
- Engine metering: Oil pressure, Coolant temperature, Battery voltage, Engine speed
- AC Alternator metering: L-L Voltage and L-N Voltage, Current (1 and 3 phase), Volt-Amperes (phase and total) and Frequency
- Engine protection: Low lube oil pressure, High/Low coolant temperature, Over speed, Battery Over/Under/Weak Volts, Fail to crank/start, Sensor failure
- AC Alternator protection: Over/Under voltage, Over/Under frequency, Over current, Short circuit and Loss of AC sensing
- Data logging: Engine hours, Control hours, Engine starts and upto 10 recent fault codes
- Configurable glow plug control
- Configurable cycle cranking
- 12 and 24 Volt DC operation
- Sleep mode
- Programmable I/Os (4 inputs and 2 outputs), expandable with AUX101/102 modules
- Modbus interface (RS485 RTU)
- InPower compatible (PC based service tool)
- Certifications - meets the requirement of relevant UL, NFPA, ISO, IEC, Mil Std., CE and CSA standards

## Silencer

- Hospital grade silencer suitably optimised to meet stringent noise emission standards laid down by MoEF / CPCB

## Mounting Arrangement

- Engine and alternator are mounted on a common MS fabricated base frame with AVM pads.
- Base frame with integral fuel tank is provided with drain plug, air vent, inlet and outlet connection, level indicator and provision for cleaning

## Optional

- **Engine:** Coolant heater, Oil Heater
- **Alternator:** PMG
- **Control Panel:** - PC3.3
  - Bargraph for PC3.3 Panel with kW, Power factor, Frequency, Current, Voltage
  - Remote HMI

**Acoustic Enclosure**

- Specially designed to meet stringent MoEF/ CPCB norms of 75 dBA @ 1mtr at 75% load under free field conditions
- The acoustic enclosure is made of CRCA sheets in munsel green shade and a structural/ sheet metal base frame painted in black
- High quality noise absorbant and fire-retardant grade acoustic insulation material (Rockwool) complying to IS 8183
- Base lifting for easy handling at customer site

- Designed to have optimum serviceability
- Air inlet louvers specially designed to operate at rated load
- Made on special purpose CNC machines for consistency in quality and workmanship
- 11 tank pretreatment process and UV resistant powder coating of all parts to withstand extreme environment
- Use of special hardware for longer life
- Flush styling - no projections
- Fluid drains for lube oil and fuel
- Fuel filling arrangement inside the enclosure

**Technical Data****Generator Set Specification**

|                                         |               |               |               |
|-----------------------------------------|---------------|---------------|---------------|
| Model                                   | C275D5P       | C300D5P       | C320D5P       |
| Duty                                    | Prime         | Prime         | Prime         |
| Power Rating kVA / kW <sub>e</sub>      | 275/220       | 300/240       | 320/256       |
| No. of Phases                           | 3             | 3             | 3             |
| Output Voltage and Frequency (V and Hz) | 415 V, 50 Hz  | 415 V, 50 Hz  | 415 V, 50 Hz  |
| Power Factor                            | 0.8 (lagging) | 0.8 (lagging) | 0.8 (lagging) |
| Current (A)                             | 382           | 417           | 445           |
| RPM                                     | 1500          | 1500          | 1500          |

**Engine Specifications**

|                                                                  |                                      |                                      |                                      |
|------------------------------------------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|
| Make                                                             | Cummins®                             | Cummins®                             | Cummins®                             |
| Model                                                            | QSL9-G16                             | QSL9-G15                             | QSL9-G15                             |
| MoEF Certified Power (bhp)                                       | 334                                  | 399                                  | 399                                  |
| Required Power for Rated kVA (bhp)                               | 332                                  | 362                                  | 382                                  |
| Cooling                                                          | Liquid Cooled<br>(EG Compleat 50:50) | Liquid Cooled<br>(EG Compleat 50:50) | Liquid cooled<br>(EG Compleat 50:50) |
| Aspiration                                                       | Turbocharged,<br>Charge Air Cooled   | Turbocharged,<br>Charge Air Cooled   | Turbocharged,<br>Charge Air Cooled   |
| No. of cylinders                                                 | 6, In-line                           | 6, In-line                           | 6, In-line                           |
| Bore (mm) x Stroke (mm)                                          | 114 x 145                            | 114 x 145                            | 114 x 145                            |
| Compression ratio                                                | 16:1:1                               | 16:1:1                               | 16:1:1                               |
| Displacement (litre)                                             | 8.9                                  | 8.9                                  | 8.9                                  |
| Fuel                                                             | High Speed Diesel                    | High Speed Diesel                    | High Speed Diesel                    |
| Fuel consumption @75% load<br>with radiator and fan* (litre/hr)  | 48.42                                | 51.95                                | 54.89                                |
| Fuel consumption @100% load<br>with radiator and fan* (litre/hr) | 62.04                                | 66.92                                | 70.52                                |
| Performance class of generator set                               | ISO 8528-5 G2                        | ISO 8528-5 G2                        | ISO 8528-5 G2                        |
| Starting system                                                  | 24 V DC Electrical                   | 24 V DC Electrical                   | 24 V DC Electrical                   |
| Lube oil specification                                           | CI4+ 15W40                           | CI4+ 15W40                           | CI4+ 15W40                           |
| Lube oil sump capacity, High-Low level (litre)                   | 30-20                                | 30-20                                | 30- 20                               |
| Total lubrication system capacity (litre)                        | 34                                   | 34                                   | 34                                   |
| Total coolant capacity (litre)                                   | 36.8                                 | 36.8                                 | 36.8                                 |
| Exhaust pipe size (inch)                                         | 6                                    | 6                                    | 6                                    |
| Total wet weight (Engine+Radiator)** (kg)                        | 961                                  | 961                                  | 961                                  |
| Length x Width x Height (Engine) (mm)                            | 1128 x 791 x 1277                    | 1128 x 791 x 1277                    | 1128 x 791 x 1277                    |
| Mean piston speed (m/s)                                          | 7.2                                  | 7.2                                  | 7.2                                  |
| Combustion air intake @100% load (±5%) (cfm)                     | 681                                  | 695                                  | 714                                  |
| Exhaust Temperature (°C)                                         | 516                                  | 522                                  | 532                                  |

**Alternator Specification**

|                                                |                                                                  |                                                                  |                                                                  |
|------------------------------------------------|------------------------------------------------------------------|------------------------------------------------------------------|------------------------------------------------------------------|
| Make                                           | Stamford (CGT)                                                   | Stamford (CGT)                                                   | Stamford (CGT)                                                   |
| Alternator frame                               | HCI444D                                                          | HCI444D                                                          | HCI444E                                                          |
| Enclosure                                      | IP 23                                                            | IP 23                                                            | IP 23                                                            |
| Voltage regulation (Max.)                      | ±1%                                                              | ±1%                                                              | ±1%                                                              |
| Class of Insulation                            | H Class                                                          | H Class                                                          | H Class                                                          |
| Winding Pitch                                  | 2/3                                                              | 2/3                                                              | 2/3                                                              |
| Stator Winding                                 | Double layer lap                                                 | Double layer lap                                                 | Double layer lap                                                 |
| Rotor                                          | Dynamically Balanced                                             | Dynamically Balanced                                             | Dynamically Balanced                                             |
| Waveform distortion/ Total Harmonic Distortion | No load < 1.5 %, Non<br>distorting balanced<br>linear load < 5 % | No load < 1.5 %, Non<br>distorting balanced<br>linear load < 5 % | No load < 1.5 %, Non<br>distorting balanced<br>linear load < 5 % |
| Maximum Unbalanced Load across phases*         | less than or equal to 25%                                        | less than or equal to 25%                                        | less than or equal to 25%                                        |
| Telephonic Harmonic factor                     | < 2%                                                             | < 2%                                                             | < 2%                                                             |

\* Fuel consumption data is based on diesel having specific gravity of 0.85 and conforming to IS:1460. Fuel consumption tolerance is +5%

\*\* With the condition that none of the phases exceeds its rated current

## Rating Definitions

### Prime Power (PRP):

Applicable for supplying power to varying electrical load for unlimited hours. Prime Power (PRP) is in accordance with ISO 8528.

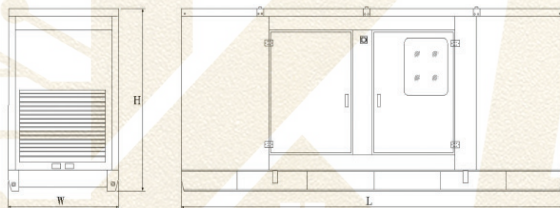
## Conformance Standards

- IS/IEC 60034-1     ■ ISO 8528     ■ ISO 9001
- IS 1460            ■ ISO 3046     ■ IS 13018

## Typical Enclosed Genset Dimensions

| Genset Model | Rating (kVA) | Length (mm) | Width (mm) | Height (mm) | Wet Weight <sup>##</sup> (kg) | Standard Fuel tank Capacity (litre) |
|--------------|--------------|-------------|------------|-------------|-------------------------------|-------------------------------------|
| C275D5P      | 275          | 4800        | 1500       | 2025        | 4065                          | 450                                 |
| C300D5P      | 300          | 4800        | 1500       | 2025        | 4265                          | 450                                 |
| C320D5P      | 320          | 4800        | 1500       | 2025        | 4350                          | 480                                 |

<sup>##</sup> Approximate Weight



Authorised Representative

SUPPLIER OF BUILDING EQUIPMENT

**"Our energy working for you."**

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