

## 1.1 CATERPILLAR PACKAGE GENSET TYPE:C9-230KVA Prime.



Image shown may not reflect actual configuration

### 1.1.1 Engine Technical Data:

Maker:	Caterpillar Inc.
Type Of Engine:	Four-Stroke, Diesel Fuel
Application:	Power Generation, Prime Power.
Cylinders Arrangement:	Inline-Type
No. Of Cylinders:	6 Cylinder
No. Of Strokes:	four Strokes
Bore:	112.00 mm
Stroke:	149.00mm
Displacement:	8.8 L
Aspiration:	Air-to-Air After-cooled
Compression Ratio:	16.1: 1
Genset Output:	230KVA - 184eKW
Revolutions Per Minute:	1500 RPM

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### **1.1.2 Air Inlet System:**

- Air Cleaner; light duty with disposable paper filter.
- Turbocharger

### **1.1.3 Exhaust System**

- Stainless steel exhaust flex, gaskets, rain cap & SAE exhaust flange for customer use; SL
- **Industrial Muffler**

### **1.1.4 Fuel System**

- Standard open set fuel tank / base supplied
- Base, formed steel with single wall integral 8-hour fuel tank

### **1.1.5 Starting System**

- Battery with rack & cables.
- **Battery Charger 5 Amp**

### **1.1.6 Cooling System:**

- Radiator, package-mounted and cooling fan with guard.
- Coolant drain line with valve
- Fan drive, battery charging alternator drive
- Caterpillar Extended Life Coolant

### **1.1.7 Lubrication System:**

- Lubricating oil
- Oil cooler
- Oil drain valve.

### **1.1.8 Governing System:**

- Cat Electronic Governor (ADEM A4).

### **1.1.9 Mounting System:**

- Captive linear vibration isolators between base and engine-generator
- Includes lifting provisions and termination points for coolant
- and lube oil drain lines..

### 1.1.10 Generator Technical Data:

Rating:	230kVA , 184eKw @ 0.8 P.F.
Voltage:	400 Volts
Frequency:	50 Hz
Speed:	1500 RPM
Insulation:	Class "H"
No. of Bearing:	Single Bearing
Excitation:	Self-Excited
Over Speed Capability:	150% of Synchronous speed
Wave Form:	Less than 2% deviation
Voltage Regulator:	Integrated voltage regulator
Voltage Regulation:	± 0.5% (steady state)
Circuit breaker:	400 amp, 3 pole

### 1.1.11 Control Panel:

Generator - mounted, EMCP4.2 .The Cat® EMCP 4.2 offers fully featured power metering, protective relaying and engine and generator control and monitoring. Engine and generator controls, diagnostics, and operating information are accessible via the control panel keypads. (Electronic Modular Control Panel 4.2) includes the followings:



#### 1.1.1.1 CONTROLS:

- Run / Auto / Stop control
- Speed and voltage adjust
- Local and remote emergency stop
- Remote start/stop
- Cycle crank

#### 1.1.1.2 MONITORING:

- Coolant temperature
- Oil pressure
- Engine speed (RPM)
- Battery voltage
- Run hours
- Crank attempt and successful start counter
- Voltage (L-L, L-N)
- Current (Phase)

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- Average Volt, Amp, Frequency
- kW, kVAr, kVA (Average, Phase, %)
- Power Factor (Average, Phase)
- kW-hr, kVAr-hr (total)

#### **WARNING/SHUTDOWN INDICATION:**

- Control switch not in auto (alarm)
- High coolant temp (alarm and shutdown)
- Low coolant temp (alarm)
- Low coolant level (alarm)
- High engine oil temp (alarm and shutdown)
- Low, high and weak battery voltage
- Over speed shutdown
- Over crank
- low oil pressure(alarm and shutdown)

#### **1.1.1.3 INPUTS & OUTPUTS:**

- Two dedicated digital inputs
- Six programmable digital inputs
- Six programmable form A dry contacts
- Two programmable form C dry contacts•
- Two digital outputs

#### **1.1.1.4 PROTECTIVE RELAYING:**

- Generator phase sequence
- Over/Under voltage (27/59)
- Over/Under frequency (81 O/U)
- Reverse Power (kW) (32)
- Reverse Reactive Power (kVAr) (32RV)
- Overcurrent (50/51)

#### **1.1.1.5 COMMUNICATION**

- Primary CAN data link
- RS-485 annunciator data link
- Modbus RTU (RS-485 Half duplex)