# DIESEL GENERATOR SET



Image shown may not reflect actual package.

## PRIME
## 2725 ekW 3406 kVA
## 60 Hz 1800 rpm 480 Volts

**Caterpillar is leading the power generation marketplace with Power Solutions engineered to deliver unmatched flexibility, expandability, reliability, and cost-effectiveness.**

## FEATURES

### FUEL/EMISSIONS STRATEGY
- Low Fuel consumption

### DESIGN CRITERIA
- The generator set accepts 100% rated load in one step per NFPA 110 and meets ISO 8528-5 transient response.

### FULL RANGE OF ATTACHMENTS
- Wide range of bolt-on system expansion attachments, factory designed and tested
- Flexible packaging options for easy and cost effective installation

### SINGLE-SOURCE SUPPLIER
- Fully prototype tested with certified torsional vibration analysis available

### WORLDWIDE PRODUCT SUPPORT
- Cat dealers provide extensive post sale support including maintenance and repair agreements
- Cat dealers have over 1,800 dealer branch stores operating in 200 countries
- The Cat® S•O•S℠ program cost effectively detects internal engine component condition, even the presence of unwanted fluids and combustion by-products

### CAT® C175-16 DIESEL ENGINE
- Reliable and durable
- Four-stroke diesel engine combines superior performance with excellent fuel economy
- Advanced electronic engine control
- Low installation and operating cost

### CAT GENERATOR
- Matched to the performance and output characteristics of Cat engines
- Industry leading mechanical and electrical design
- Industry leading motor starting capabilities
- High Efficiency

### CAT EMCP 4 CONTROL PANELS
- Simple user friendly interface and navigation
- Scalable system to meet a wide range of customer needs
- Integrated Control System and Communications Gateway

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## FACTORY INSTALLED STANDARD & OPTIONAL EQUIPMENT

| System | Standard | Optional |
|---|---|---|
| Air Inlet | • Air cleaner | |
| Cooling | • Package mounted radiator | |
| Exhaust | • Exhaust flange outlet | [ ] Exhaust mufflers (except Tier 4) |
| Fuel | • Primary fuel filter with integral water separator<br>• Secondary fuel filters<br>• Fuel priming pump | |
| Generator | • Matched to the performance and output characteristics of Cat engines<br>• Load adjustment module provides engine relief upon load impact and improves laod acceptance and recovery time<br>• IP23 protection | [ ] Oversize and premium generators<br>[ ] Permanent magnet excitation (PMG)<br>[ ] Internal excited (IE)<br>[ ] Anti-condensation space heaters |
| Power Termination | • Bus bar | [ ] Circuit breakers, UL listed<br>[ ] Circuit breakers, IEC compliant |
| Control Panel | • EMCP 4 Genset Controller | [ ] EMCP 4.2<br>[ ] EMCP 4.3<br>[ ] EMCP 4.4<br>[ ] Generator temperature monitoring and protection<br>[ ] Load share module<br>[ ] Digital I/O module<br>[ ] Remote monitoring software |
| Mounting | | [ ] Rubber vibration isolators |
| Starting/Charging | | [ ] Battery chargers<br>[ ] Oversize batteries<br>[ ] Jacket water heater<br>[ ] Heavy duty starting system<br>[ ] Charging alternator<br>[ ] Air starting motor with control and silencer (3500 & C175 models only) |
| General | • Paint - Caterpillar Yellow except rails and radiators gloss black | The following options are based on regional and product configuration:<br>[ ] Seismic Certification per Applicable Building Codes: IBC 2000, IBC 2003, IBC 2006, IBC 2009, CBC 2007<br>[ ] EU Certificate of Conformance (CE)<br>[ ] UL 2200 package<br>[ ] CSA Certification<br>[ ] EEC Declaration of Conformity<br>[ ] Enclosures- sound attenuated, weather protective<br>[ ] Automatic transfer switches (ATS)<br>[ ] Integral & sub-base fuel tanks<br>[ ] Integral & sub-base UL listed dual wall fuel tanks |

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## SPECIFICATIONS

### CAT GENERATOR

Frame size..... 1866
Excitation..... Permanent Magnet
Pitch..... 0.6667
Number of poles..... 4
Number of bearings..... 2
Number of Leads..... 006
Insulation.... Class H with tropicalization and anti-abrasion
- Consult your Caterpillar dealer for available voltages
IP Rating..... IP23
Alignment..... Closed Coupled
Overspeed capability..... 125
Wave form Deviation (Line to Line)..... 5%
Voltage regulator..... 3 Phase sensing with selectible volts/Hz
Voltage regulation..... Less than +/- 1/2% (steady state)
Less than +/- 1/2% (with 3% speed change)

### CAT DIESEL ENGINE

C175 SCAC, V-16, 4-Stroke Water-cooled Diesel
Bore..... 175.00 mm (6.89 in)
Stroke..... 220.00 mm (8.66 in)
Displacement..... 84.67 L (5166.88 $in^3$)
Compression Ratio..... 15.3:1
Aspiration..... Turbo Aftercooled
Fuel System..... Common Rail
Governor Type..... ADEM™ A4

### CAT EMCP 4 SERIES CONTROLS

EMCP 4 controls including:
- Run / Auto / Stop Control
- Speed and Voltage Adjust
- Engine Cycle Crank
- 24-volt DC operation
- Environmental sealed front face
- Text alarm/event descriptions

Digital indication for:
- RPM
- DC volts
- Operating hours
- Oil pressure (psi, kPa or bar)
- Coolant temperature
- Volts (L-L & L-N), frequency (Hz)
- Amps (per phase & average)
- ekW, kVA, kVAR, kW-hr, %kW, PF

Warning/shutdown with common LED indication of:
- Low oil pressure
- High coolant temperature
- Overspeed
- Emergency stop
- Failure to start (overcrank)
- Low coolant temperature
- Low coolant level

Programmable protective relaying functions:
- 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)

Communications:
- Six digital inputs (4.2 only)
- Four relay outputs (Form A)
- Two relay outputs (Form C)
- Two digital outputs
- Customer data link (Modbus RTU)
- Accessory module data link
- Serial annunciator module data link
- Emergency stop pushbutton

Compatible with the following:
- Digital I/O module
- Local Annunciator
- Remote CAN annunciator
- Remote serial annunciator

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## TECHNICAL DATA

| Open Generator Set - - 1800 rpm/60 Hz/480 Volts | DM8452 | |
|---|---|---|
| **Generator Set Package Performance** | | |
| Genset Power rating @ 0.8 pf | 3406.25 kVA | |
| Genset Power rating with fan | 2725 ekW | |
| **Fuel Consumption** | | |
| 100% load with fan | 721.7 L/hr | 190.7 Gal/hr |
| 75% load with fan | 529.0 L/hr | 139.7 Gal/hr |
| 50% load with fan | 384.2 L/hr | 101.5 Gal/hr |
| **Cooling System**[1] | | |
| Air flow restriction (system) | 0.12 kPa | 0.48 in. water |
| Engine coolant capacity | 303.5 L | 80.2 gal |
| **Inlet Air** | | |
| Combustion air inlet flow rate | 248.2 $m^3$/min | 8765.1 cfm |
| **Exhaust System** | | |
| Exhaust stack gas temperature | 461.6 ° C | 862.9 ° F |
| Exhaust gas flow rate | 631.8 $m^3$/min | 22311.8 cfm |
| Exhaust flange size (internal diameter) | 150 mm | 6 in |
| Exhaust system backpressure (maximum allowable) | 6.7 kPa | 26.9 in. water |
| **Heat Rejection** | | |
| Heat rejection to coolant (total) | 1243 kW | 70689 Btu/min |
| Heat rejection to exhaust (total) | 2705 kW | 153833 Btu/min |
| Heat rejection to atmosphere from engine | 169 kW | 9611 Btu/min |
| Heat rejection to atmosphere from generator | 98.8 kW | 5618.7 Btu/min |
| **Alternator**[2] | | |
| Motor starting capability @ 30% voltage dip | 7322 skVA | |
| Frame | 1866 | |
| Temperature Rise | 125 ° C | 225 ° F |
| **Emissions (Nominal)**[3] | | |
| NOx g/hp-hr | 6.39 g/hp-hr | |
| CO g/hp-hr | .7 g/hp-hr | |
| HC g/hp-hr | .14 g/hp-hr | |
| PM g/hp-hr | .058 g/hp-hr | |

[1] For ambient and altitude capabilities consult your Cat dealer. Air flow restriction (system) is added to existing restriction from factory.

[2] UL 2200 Listed packages may have oversized generators with a different temperature rise and motor starting characteristics. Generator temperature rise is based on a 40 degree C ambient per NEMA MG1-32.

[3] Emissions data measurement procedures are consistent with those described in EPA CFR 40 Part 89, Subpart D & E and ISO8178-1 for measuring HC, CO, PM, NOx. Data shown is based on steady state operating conditions of 77ºF, 28.42 in HG and number 2 diesel fuel with 35º API and LHV of 18,390 btu/lb. The nominal emissions data shown is subject to instrumentation, measurement, facility and engine to engine variations. Emissions data is based on 100% load and thus cannot be used to compare to EPA regulations which use values based on a weighted cycle.

## RATING DEFINITIONS AND CONDITIONS

**Applicable Codes and Standards:** AS1359, CSA C22.2 No 100-04, UL142, UL489, UL601, UL869, UL2200, NFPA 37, NFPA 70, NFPA 99, NFPA 110, IBC, IEC60034-1, ISO3046, ISO8528, NEMA MG 1-22, NEMA MG 1-33, 72/23/EEC, 98/37/EC, 2004/108/EC

**Prime** - Output available with varying load for an unlimited time. Average power output is 70% of the prime power rating. Typical peak demand is 100% of prime rated ekW with 10% overload capability for emergency use for a maximum of 1 hour in 12. Overload operation cannot exceed 25 hours per year.

**Ratings** are based on SAE J1349 standard conditions. These ratings also apply at ISO3046 standard conditions.

**Fuel Rates** are based on fuel oil of 35° API (16° C or 60° F) gravity having an LHV of 42 780 kJ/kg (18,390 Btu/lb) when used at 29° C (85° F) and weighing 838.9 g/liter (7.001 lbs/U.S. gal.).

**Additional Ratings** may be available for specific customer requirements. Consult your Cat representative for details.

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## DIMENSIONS

| Package Dimensions | | |
|---|---|---|
| **Length** | **7801.5 mm** | **307.15 in** |
| **Width** | **2889.3 mm** | **113.75 in** |
| **Height** | **3409.7 mm** | **134.24 in** |

NOTE: For reference only - do not use for installation design. Please contact your local dealer for exact weight and dimensions. (General Dimension Drawing #3288943).

Performance No.: DM8452

Feature Code: 175DE01

Gen. Arr. Number: 3111146

Source: U.S. Sourced

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