# DIESEL GENERATOR SET

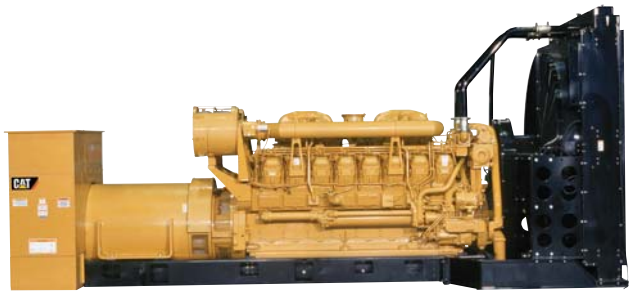


Image shown may not reflect actual package.

## CONTINUOUS
## 1600 ekW 2000 kVA
## 50 Hz 1500 rpm 400 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® 3516B-HD TA DIESEL ENGINE
- Reliable, rugged, durable design
- Field-proven in thousands of applications worldwide
- Four-stroke-cycle diesel engine combines consistent performance and excellent fuel economy with minimum weight

### 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

Cat Generator
Frame size ..... 1844
Excitation ..... Permanent Magnet
Pitch ..... 0.6667
Number of poles ..... 4
Number of bearings ..... 2
Number of Leads ..... 006
Insulation ..... UL 1446 Recognized Class H with tropicalization and antiabrasion
- Consult your Caterpillar dealer for available voltages
IP Rating ..... IP23
Alignment ..... Closed Coupled
Overspeed capability ..... 150
Wave form Deviation (Line to Line) ..... 003.00
Voltage regulator..... ..... 3 Phase sensing with selectible volts/Hz
Voltage regulation .....Less than +/- 1/2% (steady state) Less than +/- 1% (no load to full load)

### CAT DIESEL ENGINE

3516B-HD TA, V-16, 4-Stroke Water-cooled Diesel
Bore ..... 170.00 mm (6.69 in)
Stroke ..... 215.00 mm (8.46 in)
Displacement ..... 78.08 L (4764.73 $in^3$)
Compression Ratio ..... 15.5:1
Aspiration ..... TA
Fuel System ..... Electronic unit injection
Governor Type ..... ADEM3

### 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 - - 1500rpm/50 Hz/400 Volts | DM8377 | |
|---|---|---|
| **Low Fuel Consumption** | | |
| **Generator Set Package Performance** | | |
| Genset Power rating @ 0.8 pf | 2000 kVA | |
| Genset Power rating with fan | 1600 ekW | |
| **Fuel Consumption** | | |
| 100% load with fan | 409.0 L/hr | 108.0 Gal/hr |
| 75% load with fan | 305.2 L/hr | 80.6 Gal/hr |
| 50% load with fan | 213.8 L/hr | 56.5 Gal/hr |
| **Cooling System** [1] | | |
| Engine Coolant capacity with radiator/exp. tank | 382.0 L | 100.9 gal |
| Engine coolant capacity | 233.0 L | 61.6 gal |
| Radiator coolant capacity | 149.0 L | 39.4 gal |
| **Inlet Air** | | |
| Combustion air inlet flow rate | 129.7 $m^3$/min | 4580.3 cfm |
| **Exhaust System** | | |
| Exhaust stack gas temperature | 508.8 ° C | 947.8 ° F |
| Exhaust gas flow rate | 356.7 $m^3$/min | 12596.8 cfm |
| Exhaust flange size (internal diameter) | 203.2 mm | 8.0 in |
| Exhaust system backpressure (maximum allowable) | 6.7 kPa | 26.9 in. water |
| **Heat Rejection** | | |
| Heat rejection to coolant (total) | 640 kW | 36397 Btu/min |
| Heat rejection to exhaust (total) | 1646 kW | 93608 Btu/min |
| Heat rejection to aftercooler | 239 kW | 13592 Btu/min |
| Heat rejection to atmosphere from engine | 147 kW | 8360 Btu/min |
| Heat rejection to atmosphere from generator | 71.9 kW | 4088.9 Btu/min |
| **Alternator** [2] | | |
| Motor starting capability @ 30% voltage dip | 6537 skVA | |
| Frame | 1844 | |
| Temperature Rise | 105 ° C | 189 ° F |
| **Lube System** | | |
| Sump refill with filter | 401.3 L | 106.0 gal |
| **Emissions (Nominal)** [3] | | |
| NOx mg/nm3 | 3446.2 $mg/nm^3$ | |
| CO mg/nm3 | 163.3 $mg/nm^3$ | |
| HC mg/nm3 | 70.7 $mg/nm^3$ | |
| PM mg/nm3 | 14.3 $mg/nm^3$ | |

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

[2] Generator temperature rise is based on a 40° C (104° F) 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 77°F, 28.42 in HG and number 2 diesel fuel with 35° 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,CSAC22.2 No100-04, UL142,UL489, UL869, UL2200, NFPA37, NFPA70, NFPA99, NFPA110,IBC, IEC60034-1, ISO3046, ISO8528, NEMA MG1-22, NEMA MG1-33, 72/23/EEC, 98/37/EC, 2004/108/EC

**Continuous** – Output available with non-varying load for an unlimited time. Average power output is 70-100% of the continuous power rating. Typical peak demand is 100% of the continuous rated ekW for 100% of the operating hours.

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

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

Additional ratings may be available for specific customer requirements, contact your Cat Dealer for details. For information regarding Low Sulfur fuel and Biodiesel capability, please consult your Cat Dealer.

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## DIMENSIONS

| Package Dimensions | | |
|---|---|---|
| Length | 5916 mm | 232.9 in |
| Width | 2286 mm | 90.0 in |
| Height | 2367 mm | 93.2 in |
| Weight | 14258 kg | 31433 lbs |

NOTE: For reference only - do not use for installation design. Please contact your local dealer for exact weight and dimensions.

Performance No.: DM8377

Feature Code: 516DE9H

Gen. Arr. Number: 3111142

Source: European Sourced

LEHE0574-00 06/14

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