# DIESEL GENERATOR SET




Image shown may not reflect actual package.

# PRIME

## 1280 ekW 1600 kVA 50 Hz 1500 rpm 11 000 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 Emissions

### 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® 3512B-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 HV GENERATOR
- Matched to the performance and output characteristics of Cat engines
- Single point access to accessory connections
- UL 1446 Recognized Class F insulation

### 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 | • Single element canister type air cleaner<br>• Service indicator | [ ] Dual element & heavy duty air cleaners<br>[ ] Air inlet adapters & shut-off |
| Cooling | • Radiator with guard<br>• Coolant drain line with valve<br>• Fan and belt guards<br>• Cat® Extended Life Coolant* | [ ] Radiator duct flange<br>[ ] Jacket water heater |
| Exhaust | • Dry exhaust manifold<br>• Flanged faced outlets | [ ] Mufflers and Silencers<br>[ ] Stainless steel exhaust flex fittings<br>[ ] Elbows, flanges, expanders & Y adapters |
| Fuel | • Secondary fuel filters<br>• Fuel priming pump<br>• Flexible fuel lines<br>• Fuel cooler* | [ ] Water separator<br>[ ] Duplex fuel filter |
| Generator | • Class F insulation<br>• Cat digital voltage regulator (CDVR) with kVAR/PF control, 3-phase sensing<br>• Winding temperature detectors<br>• Anti-condensation heaters | [ ] Oversized generators<br>[ ] Cross current compensation transformer<br>[ ] Bearing temperature detectors |
| Power Termination | • Bus bar (NEMA mechanical lug holes)<br>• Right hand cable entry<br>• Top or bottom cable entry | [ ] Left hand cable entry |
| Governor | • ADEM™ 3 | [ ] Load share module |
| Control Panels | • EMCP 4.2<br>• User Interface panel (UIP) - wall mounted<br>• AC & DC customer wiring area (right side)<br>• Emergency stop pushbutton | [ ] Option for right or left mount UIP<br>[ ] Local & remote annunciator modules<br>[ ] Digital I/O Module<br>[ ] Generator temperature monitoring & protection<br>[ ] Remote monitoring software |
| Lube | • Lubricating oil and filter<br>• Oil drain line with valves<br>• Fumes disposal<br>• Gear type lube oil pump | [ ] Oil level regulator<br>[ ] Deep sump oil pan<br>[ ] Electric & air prelube pumps<br>[ ] Manual prelube with sump pump<br>[ ] Duplex oil filter |
| Mounting | • Rails - Engine / generator / radiator mounting<br>• Rubber anti-vibration mounts (shipped loose) | [ ] Isolator removal<br>[ ] Spring-type vibration isolator (shipped loose)<br>[ ] IBC Isolators |
| Starting/Charging | • 24 volt starting motor(s)<br>• Batteries with rack and cables<br>• Battery disconnect switch | [ ] Battery chargers (5 or 10 amp)<br>[ ] 45 amp charging alternator<br>[ ] Oversize batteries<br>[ ] Ether starting aid<br>[ ] Heavy duty starting motors<br>[ ] Barring device (manual) |

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## SPECIFICATIONS

### CAT GENERATOR

Cat HV Generator
Frame size..... 2750
Excitation..... Permanent Magnet
Pitch..... 0.6670
Number of poles..... 4
Number of bearings..... 2
Number of Leads..... 006
Insulation..... Class H with tropicalization and antiabrasion
Insulation..... Class F with tropicalization and antiabrasion
- Consult your Caterpillar dealer for available voltages
IP Rating..... IP23
Alignment..... Closed Coupled
Overspeed capability..... 125
Wave form Deviation (Line to Line)..... 002.00
Voltage regulator..... 3 Phase sensing with volts/Hz
Voltage regulation..... Less than +/- 1/2% (steady state)
Less than +/- 1% (no load to full load)
Telephone influence factor..... Less than 50
Harmonic Distortion..... Less than 5%

### CAT DIESEL ENGINE

3512B-HD TA, V-12, 4-Stroke Water-cooled Diesel
Bore..... 170.00 mm (6.69 in)
Stroke..... 215.00 mm (8.46 in)
Displacement..... 58.56 L (3573.55 $in^3$)
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 - - 1500 rpm/50 Hz/11 000 Volts | DM8244 | |
|---|---|---|
| **Low Emissions** | | |
| **Generator Set Package Performance** | | |
| Genset Power rating @ 0.8 pf | 1600 kVA | |
| Genset Power rating with fan | 1280 ekW | |
| **Coolant to aftercooler** | | |
| Coolant to aftercooler temp max | 90 ° C | 194 ° F |
| **Fuel Consumption** | | |
| 100% load with fan | 334.6 L/hr | 88.4 Gal/hr |
| 75% load with fan | 252.8 L/hr | 66.8 Gal/hr |
| 50% load with fan | 177.2 L/hr | 46.8 Gal/hr |
| **Cooling System**[1] | | |
| Air flow restriction (system) | 0.12 kPa | 0.48 in. water |
| Air flow (max @ rated speed for radiator arrangement) | 1558 m³/min | 55020 cfm |
| Engine Coolant capacity with radiator/exp. tank | 286.8 L | 75.8 gal |
| Engine coolant capacity | 156.8 L | 41.4 gal |
| Radiator coolant capacity | 130.0 L | 34.3 gal |
| **Inlet Air** | | |
| Combustion air inlet flow rate | 111.0 m³/min | 3919.9 cfm |
| **Exhaust System** | | |
| Exhaust stack gas temperature | 444.6 ° C | 832.3 ° F |
| Exhaust gas flow rate | 280.9 m³/min | 9919.9 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) | 598 kW | 34008 Btu/min |
| Heat rejection to exhaust (total) | 1232 kW | 70064 Btu/min |
| Heat rejection to aftercooler | 233 kW | 13251 Btu/min |
| Heat rejection to atmosphere from engine | 133 kW | 7564 Btu/min |
| Heat rejection to atmosphere from generator | 61.7 kW | 3508.9 Btu/min |
| **Alternator**[2] | | |
| Motor starting capability @ 30% voltage dip | 3928 skVA | |
| Frame | 2750 | |
| Temperature Rise | 105 ° C | 189 ° F |
| **Lube System** | | |
| Sump refill with filter | 310.4 L | 82.0 gal |
| **Emissions (Nominal)**[3] | | |
| NOx mg/nm3 | 2661.2 mg/nm³ | |
| CO mg/nm3 | 405.3 mg/nm³ | |
| HC mg/nm3 | 63.8 mg/nm³ | |
| PM mg/nm3 | 15.9 mg/nm³ | |

[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 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

**Meets or Exceeds International Specifications:** AS1359, CSA, IEC60034-1, ISO3046, ISO8528, NEMA MG 1-22, NEMA MG 1-33, UL508A, 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. Prime power in accordance with ISO3046. Prime ambients shown indicate ambient temperature at 100% load which results in a coolant top tank temperature just below the alarm temperature.

**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 (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, contact your Cat representative for details. For information regarding Low Sulfur fuel and Biodiesel capability, please consult your Cat dealer.

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## DIMENSIONS

| Package Dimensions | | |
|---|---|---|
| **Length** | **5693.2 mm** | **224.14 in** |
| **Width** | **2073.1 mm** | **81.62 in** |
| **Height** | **2367.2 mm** | **93.2 in** |
| **Weight** | **16 113 kg** | **35,523 lb** |

NOTE: For reference only - do not use for installation design. Please contact your local dealer for exact weight and dimensions. (General Dimension Drawing #2748721).

Performance No.: DM8244

Feature Code: 512DE5G

Gen. Arr. Number: 2524230

Source: U.S. Sourced

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