



Image shown may not reflect actual package.

## PRIME

**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 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<sup>SM</sup> program cost effectively detects internal engine component condition, even the presence of unwanted fluids and combustion by-products

### CAT® 3516B 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 SR5 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         | <ul style="list-style-type: none"> <li>• Single element canister type air cleaner</li> <li>• Service indicator</li> </ul>                                                                                       | <input type="checkbox"/> Dual element & heavy duty air cleaners<br><input type="checkbox"/> Air inlet adapters & shut-off                                                                                                                                                                                                                                                                                     |
| Cooling           | <ul style="list-style-type: none"> <li>• Radiator with guard</li> <li>• Coolant drain line with valve</li> <li>• Fan and belt guards</li> <li>• Cat® Extended Life Coolant*</li> </ul>                          | <input type="checkbox"/> Radiator duct flange<br><input type="checkbox"/> Jacket water heater                                                                                                                                                                                                                                                                                                                 |
| Exhaust           | <ul style="list-style-type: none"> <li>• Dry exhaust manifold</li> <li>• Flanged faced outlets</li> </ul>                                                                                                       | <input type="checkbox"/> Mufflers and Silencers<br><input type="checkbox"/> Stainless steel exhaust flex fittings<br><input type="checkbox"/> Elbows, flanges, expanders & Y adapters                                                                                                                                                                                                                         |
| Fuel              | <ul style="list-style-type: none"> <li>• Secondary fuel filters</li> <li>• Fuel priming pump</li> <li>• Flexible fuel lines</li> <li>• Fuel cooler*</li> </ul>                                                  | <input type="checkbox"/> Water separator<br><input type="checkbox"/> Duplex fuel filter                                                                                                                                                                                                                                                                                                                       |
| Generator         | <ul style="list-style-type: none"> <li>• Class H insulation</li> <li>• Cat digital voltage regulator (CDVR) with kVAR/PF control, 3-phase sensing</li> <li>• Reactive droop</li> </ul>                          | <input type="checkbox"/> Oversize & premium generators<br><input type="checkbox"/> Winding temperature detectors<br><input type="checkbox"/> Bearing temperature detectors<br><input type="checkbox"/> Anti-condensation heaters                                                                                                                                                                              |
| Power Termination | <ul style="list-style-type: none"> <li>• Bus bar (NEMA or IEC mechanical lug holes)</li> <li>• Top cable entry</li> </ul>                                                                                       | <input type="checkbox"/> Circuit breakers, UL listed, 3 pole with shunt trip, 100% rated, manual or electrically operated<br><input type="checkbox"/> Circuit breakers, IEC compliant, 3 or 4 pole with shunt trip, manual or electrically operated<br><input type="checkbox"/> Bottom cable entry<br><input type="checkbox"/> Power terminations can be located on the right, left and/or rear as an option. |
| Governor          | <ul style="list-style-type: none"> <li>• ADEM™ 3</li> </ul>                                                                                                                                                     | <input type="checkbox"/> Load share module                                                                                                                                                                                                                                                                                                                                                                    |
| Control Panels    | <ul style="list-style-type: none"> <li>• EMCP 4.2</li> <li>• User Interface panel (UIP) - wall mounted</li> <li>• AC &amp; DC customer wiring area (right side)</li> <li>• Emergency stop pushbutton</li> </ul> | <input type="checkbox"/> Option for right or left mount UIP<br><input type="checkbox"/> Local & remote annunciator modules<br><input type="checkbox"/> Digital I/O Module<br><input type="checkbox"/> Generator temperature monitoring & protection<br><input type="checkbox"/> Remote monitoring software                                                                                                    |
| Lube              | <ul style="list-style-type: none"> <li>• Lubricating oil and filter</li> <li>• Oil drain line with valves</li> <li>• Fumes disposal</li> <li>• Gear type lube oil pump</li> </ul>                               | <input type="checkbox"/> Oil level regulator<br><input type="checkbox"/> Deep sump oil pan<br><input type="checkbox"/> Electric & air prelube pumps<br><input type="checkbox"/> Manual prelube with sump pump<br><input type="checkbox"/> Duplex oil filter                                                                                                                                                   |
| Mounting          | <ul style="list-style-type: none"> <li>• Rails - Engine / generator / radiator mounting</li> <li>• Rubber anti-vibration mounts (shipped loose)</li> </ul>                                                      | <input type="checkbox"/> Isolator removal<br><input type="checkbox"/> Spring-type vibration isolator (shipped loose)<br><input type="checkbox"/> IBC Isolators                                                                                                                                                                                                                                                |

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## SPECIFICATIONS

### CAT GENERATOR

|                                                          |                                                                  |
|----------------------------------------------------------|------------------------------------------------------------------|
| Cat Generator                                            |                                                                  |
| Frame size.....                                          | 1647                                                             |
| Excitation.....                                          | Internal Excitation                                              |
| Pitch.....                                               | 0.6667                                                           |
| Number of poles.....                                     | 4                                                                |
| Number of bearings.....                                  | Single bearing                                                   |
| Number of Leads.....                                     | 006                                                              |
| Insulation.....                                          | UL 1446 Recognized Class H with tropicalization and antiabrasion |
| Insulation.....                                          | Class F with tropicalization and antiabrasion                    |
| - Consult your Caterpillar dealer for available voltages |                                                                  |
| IP Rating.....                                           | IP23                                                             |
| Alignment.....                                           | Pilot Shaft                                                      |
| Overspeed capability.....                                | 150                                                              |
| Wave form Deviation (Line to Line).....                  | 002.00                                                           |
| Voltage regulator.....                                   | 3 Phase sensing with selectable 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

|                                              |                                    |
|----------------------------------------------|------------------------------------|
| 3516B TA, V-16, 4-Stroke Water-cooled Diesel |                                    |
| Bore.....                                    | 170.00 mm (6.69 in)                |
| Stroke.....                                  | 190.00 mm (7.48 in)                |
| Displacement.....                            | 69.00 L (4210.64 in <sup>3</sup> ) |
| Compression Ratio.....                       | 14.0:1                             |
| 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 (kVA) (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/400 Volts                                                                                                                                                                             | DM8359                                                      |                                                                                   |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------|-----------------------------------------------------------------------------------|
| <b>Low Emissions</b>                                                                                                                                                                                                        |                                                             |                                                                                   |
| <b>Coolant to aftercooler</b><br>Coolant to aftercooler temp max                                                                                                                                                            | 90 ° C                                                      | 194 ° F                                                                           |
| <b>Generator Set Package Performance</b><br>Genset Power rating @ 0.8 pf<br>Genset Power rating with fan                                                                                                                    | 2000 kVA<br>1600 ekW                                        |                                                                                   |
| <b>Fuel Consumption</b><br>100% load with fan<br>75% load with fan<br>50% load with fan                                                                                                                                     | 412.2 L/hr<br>311.4 L/hr<br>218.0 L/hr                      | 108.9 Gal/hr<br>82.3 Gal/hr<br>57.6 Gal/hr                                        |
| <b>Cooling System<sup>1</sup></b><br>Engine Coolant capacity with radiator/exp. tank<br>Engine coolant capacity<br>Radiator coolant capacity                                                                                | 382.0 L<br>233.0 L<br>149.0 L                               | 100.9 gal<br>61.6 gal<br>39.4 gal                                                 |
| <b>Inlet Air</b><br>Combustion air inlet flow rate                                                                                                                                                                          | 122.9 m³/min                                                | 4340.2 cfm                                                                        |
| <b>Exhaust System</b><br>Exhaust stack gas temperature<br>Exhaust gas flow rate<br>Exhaust flange size (internal diameter)<br>Exhaust system backpressure (maximum allowable)                                               | 517.0 ° C<br>339.4 m³/min<br>203.2 mm<br>6.7 kPa            | 962.6 ° F<br>11985.8 cfm<br>8.0 in<br>26.9 in. water                              |
| <b>Heat Rejection</b><br>Heat rejection to coolant (total)<br>Heat rejection to exhaust (total)<br>Heat rejection to aftercooler<br>Heat rejection to atmosphere from engine<br>Heat rejection to atmosphere from generator | 674 kW<br>1580 kW<br>262 kW<br>152 kW<br>68.4 kW            | 38330 Btu/min<br>89854 Btu/min<br>14900 Btu/min<br>8644 Btu/min<br>3889.9 Btu/min |
| <b>Alternator<sup>2</sup></b><br>Motor starting capability @ 30% voltage dip<br>Frame<br>Temperature Rise                                                                                                                   | 5865 skVA<br>1647<br>125 ° C                                | 225 ° F                                                                           |
| <b>Lube System</b><br>Sump refill with filter                                                                                                                                                                               | 401.3 L                                                     | 106.0 gal                                                                         |
| <b>Emissions (Nominal)<sup>3</sup></b><br>NOx mg/nm³<br>CO mg/nm³<br>HC mg/nm³<br>PM mg/nm³                                                                                                                                 | 3787.0 mg/nm³<br>204.1 mg/nm³<br>58.3 mg/nm³<br>23.6 mg/nm³ |                                                                                   |

<sup>1</sup> For ambient and altitude capabilities consult your Cat dealer. Air flow restriction (system) is added to existing restriction from factory.

<sup>2</sup> Generator temperature rise is based on a 40° C (104° F) ambient per NEMA MG1-32.

<sup>3</sup> 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.

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## RATING DEFINITIONS AND CONDITIONS

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**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

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| Package Dimensions |           |           |
|--------------------|-----------|-----------|
| Length             | 6005.6 mm | 236.44 in |
| Width              | 2286.0 mm | 90 in     |
| Height             | 2342.0 mm | 92.2 in   |
| Weight             | 9072 kg   | 20,000 lb |

NOTE: For reference only - do not use for installation design. Please contact your local dealer for exact weight and dimensions. (General Dimension Drawing #2882680).

Performance No.: DM8359

Feature Code: 516DE90

Gen. Arr. Number: 2523862

Source: U.S. Sourced

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