

# Cat® 3516E

## High Power Density (HPD) Diesel Generator Sets

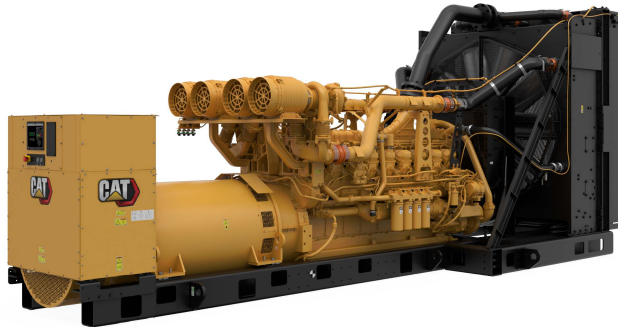


Image shown may not reflect actual configuration

|                                     |             |
|-------------------------------------|-------------|
| Bore – mm (in)                      | 170 (6.69)  |
| Stroke – mm (in)                    | 215 (8.46)  |
| Displacement – L (in <sup>3</sup> ) | 78.1 (4766) |
| Compression Ratio                   | 14.0:1      |
| Aspiration                          | TA          |
| Fuel System                         | EUI         |
| Governor Type                       | ADEM™ A5    |

| Standby<br>50 Hz kVA (ekW) | Mission Critical<br>50 Hz kVA (ekW) | Prime<br>50 Hz kVA (ekW) | Emissions Performance                             |
|----------------------------|-------------------------------------|--------------------------|---------------------------------------------------|
| 3500 (2800)                | 3500 (2800)                         | 3175 (2540)              | Tier 2 Certified<br>U.S. EPA Stationary Emergency |
| 3250 (2600)                | 3250 (2600)                         | 2950 (2360)              |                                                   |

### Features

#### Cat® Diesel Engine

- Tier 2 Certified (U.S. EPA Stationary Emergency) emissions standards
- Reliable performance proven in thousands of applications worldwide

#### Generator Set Package

- Accepts 100% block load in one step
- Meets NFPA 110 loading requirements
- Conforms to ISO 8528-5 G3 load acceptance requirements
- Reliability verified through torsional vibration, fuel consumption, oil consumption, transient performance, and endurance testing

#### Alternators

- Superior motor starting capability minimizes need for oversizing generator
- Designed to match performance and output characteristics of Cat diesel engines

#### Cooling System

- Cooling systems available to operate in ambient temperatures up to 50°C (122°F)
- Tested to ensure proper generator set cooling

#### EMCP 4 Control Panels

- User-friendly interface and navigation
- Scalable system to meet a wide range of installation requirements
- Expansion modules and site specific programming for specific customer requirements

#### Warranty

- 24 months/1000-hour warranty for standby ratings
- Extended service protection is available to provide extended coverage options

#### Worldwide Product Support

- Cat dealers have over 1,800 dealer branch stores operating in 200 countries
- Your local Cat dealer provides extensive post-sale support, including maintenance and repair agreements

#### Financing

- Caterpillar offers an array of financial products to help you succeed through financial service excellence
- Options include loans, finance lease, operating lease, working capital, and revolving line of credit
- Contact your local Cat dealer for availability in your region

## Standard and Optional Equipment

### Engine

#### **Air Cleaner**

- ☐ Single element
- ☐ Dual element

#### **Muffler**

- ☐ Industrial grade (15 dB)
- ☐ Critical grade (25 dB)
- ☐ Hospital grade (35 dB)

#### **Starting**

- ☐ Standard batteries
- ☐ Oversized batteries
- ☐ Standard electric starter(s)
- ☐ Dual electric starter(s)
- ☐ Air starter(s)
- ☐ Jacket water heater

### Alternator

#### **Output voltage**

- ☐ 400V    ☐ 6900V
- ☐ 415V    ☐ 10000V
- ☐ 3300V    ☐ 10500V
- ☐ 6300V    ☐ 11000V
- ☐ 6600V

#### **Temperature Rise (over 40°C ambient)**

- ☐ 150°C
- ☐ 125°C/130°C

#### **Winding type**

- ☐ Random wound
- ☐ Form wound

#### **Excitation**

- ☐ Internal excitation (IE)
- ☐ Permanent magnet (PM)

#### **Attachments**

- ☐ Anti-condensation heater
- ☐ Stator and bearing temperature monitoring and protection

### Power Termination

#### **Type**

- ☐ Bus bar
- ☐ Circuit breaker
- ☐ 5000A    ☐ 6300A
- ☐ UL        ☐ IEC
- ☐ 3-pole    ☐ 4-pole
- ☐ Manually operated
- ☐ Electrically operated

#### **Trip Unit**

- ☐ LSI        ☐ LSI-G
- ☐ LSIG-P

### Control System

#### **Controller**

- ☐ EMCP 4.2B
- ☐ EMCP 4.3
- ☐ EMCP 4.4

#### **Attachments**

- ☐ Local annunciator module
- ☐ Remote annunciator module
- ☐ Expansion I/O module
- ☐ Remote monitoring software

### Charging

- ☐ Battery charger – 10A
- ☐ Battery charger – 20A
- ☐ Battery charger – 35A

### Vibration Isolators

- ☐ Rubber
- ☐ Spring
- ☐ Seismic rated

### Cat Connect

#### **Connectivity**

- ☐ Ethernet
- ☐ Cellular

### Extended Service Options

#### **Terms**

- ☐ 2 year (prime)
- ☐ 3 year
- ☐ 5 year
- ☐ 10 year

#### **Coverage**

- ☐ Silver
- ☐ Gold
- ☐ Platinum
- ☐ Platinum Plus

### Ancillary Equipment

- ☐ Automatic transfer switch (ATS)
- ☐ Paralleling switchgear
- ☐ Paralleling controls

### Certifications

- ☐ IBC seismic certification
- ☐ EU & GB Declaration of Conformity
- ☐ EU & GB Declaration of Incorporation
- ☐ Eurasian Conformity (EAC)

**Note:** Some options may not be available on all models. Certifications may not be available with all model configurations. Consult factory for availability.

## Package Performance

| Performance                                                       | Standby          |           | Mission Critical |           | Prime            |           |
|-------------------------------------------------------------------|------------------|-----------|------------------|-----------|------------------|-----------|
| Engine Speed                                                      | 1500 rpm         |           | 1500 rpm         |           | 1500 rpm         |           |
| Frequency                                                         | 50 Hz            |           | 50 Hz            |           | 50 Hz            |           |
| Gen set power rating with fan                                     | 2800 ekW         |           | 2800 ekW         |           | 2540 ekW         |           |
| Gen set power rating with fan @ 0.8 power factor                  | 3500 kVA         |           | 3500 kVA         |           | 3175 kVA         |           |
| Emissions                                                         | Tier 2 (EPA ESE) |           | Tier 2 (EPA ESE) |           | Tier 2 (EPA ESE) |           |
| Performance number                                                | EM4771-06        |           | EM4777-05        |           | EM4783-05        |           |
| Fuel Consumption                                                  |                  |           |                  |           |                  |           |
| 100% load with fan – L/hr (gal/hr)                                | 713.6            | (188.5)   | 713.6            | (188.5)   | 664.3            | (175.5)   |
| 75% load with fan – L/hr (gal/hr)                                 | 577.7            | (152.6)   | 577.7            | (152.6)   | 534.4            | (141.2)   |
| 50% load with fan – L/hr (gal/hr)                                 | 398.1            | (105.2)   | 398.1            | (105.2)   | 361.1            | (95.4)    |
| 25% load with fan – L/hr (gal/hr)                                 | 221.3            | (58.5)    | 221.3            | (58.5)    | 205.5            | (54.3)    |
| Cooling System                                                    |                  |           |                  |           |                  |           |
| Radiator air flow restriction (system) – kPa (in. water)          | 0.12             | (0.48)    | 0.12             | (0.48)    | 0.12             | (0.48)    |
| Radiator air flow – m³/min (cfm)                                  | 2878             | (101635)  | 2878             | (101635)  | 2878             | (101635)  |
| Engine coolant capacity – L (gal)                                 | 179.0            | (47.3)    | 179.0            | (47.3)    | 179.0            | (47.3)    |
| Radiator coolant capacity – L (gal)                               | 202.0            | (53.4)    | 202.0            | (53.4)    | 202.0            | (53.4)    |
| Total coolant capacity – L (gal)                                  | 381.0            | (100.7)   | 381.0            | (100.7)   | 381.0            | (100.7)   |
| Inlet Air                                                         |                  |           |                  |           |                  |           |
| Combustion air inlet flow rate – m³/min (cfm)                     | 219.1            | (7736.0)  | 219.1            | (7736.0)  | 210.4            | (7427.9)  |
| Exhaust System                                                    |                  |           |                  |           |                  |           |
| Exhaust stack gas temperature – °C (°F)                           | 493.1            | (919.6)   | 493.1            | (919.6)   | 491.3            | (916.4)   |
| Exhaust gas flow rate – m³/min (cfm)                              | 595.0            | (21011.4) | 595.0            | (21011.4) | 567.0            | (20019.9) |
| Exhaust system backpressure (maximum allowable) – kPa (in. water) | 7.0              | (28.1)    | 7.0              | (28.1)    | 7.0              | (28.1)    |
| Heat Rejection                                                    |                  |           |                  |           |                  |           |
| Heat rejection to jacket water – kW (Btu/min)                     | 921              | (52360)   | 921              | (52360)   | 872              | (49617)   |
| Heat rejection to exhaust (total) – kW (Btu/min)                  | 2830             | (160942)  | 2830             | (160942)  | 2688             | (152879)  |
| Heat rejection to aftercooler – kW (Btu/min)                      | 874              | (49690)   | 874              | (49690)   | 797              | (45343)   |
| Heat rejection to atmosphere from engine – kW (Btu/min)           | 169              | (9622)    | 169              | (9622)    | 165              | (9400)    |
| Heat rejection from alternator – kW (Btu/min)                     | 121              | (6881)    | 121              | (6881)    | 98               | (5550)    |
| Emissions* (Nominal) - Full Load                                  |                  |           |                  |           |                  |           |
| NOx mg/Nm³ (g/hp-h)                                               | 2454.1           | (5.22)    | 2454.1           | (5.22)    | 2023.0           | (4.38)    |
| CO mg/Nm³ (g/hp-h)                                                | 231.1            | (0.49)    | 231.1            | (0.49)    | 280.0            | (0.61)    |
| HC mg/Nm³ (g/hp-h)                                                | 12.2             | (0.03)    | 12.2             | (0.03)    | 12.3             | (0.03)    |
| PM mg/Nm³ (g/hp-h)                                                | 9.1              | (0.02)    | 9.1              | (0.02)    | 12.8             | (0.03)    |
| Emissions* (Potential Site Variation) - Full Load                 |                  |           |                  |           |                  |           |
| NOx mg/Nm³ (g/hp-h)                                               | 2944.9           | (6.26)    | 2944.9           | (6.26)    | 2427.7           | (5.25)    |
| CO mg/Nm³ (g/hp-h)                                                | 416.1            | (0.89)    | 416.1            | (0.89)    | 504.0            | (1.09)    |
| HC mg/Nm³ (g/hp-h)                                                | 16.3             | (0.04)    | 16.3             | (0.04)    | 16.3             | (0.04)    |
| PM mg/Nm³ (g/hp-h)                                                | 12.8             | (0.03)    | 12.8             | (0.03)    | 18.0             | (0.05)    |

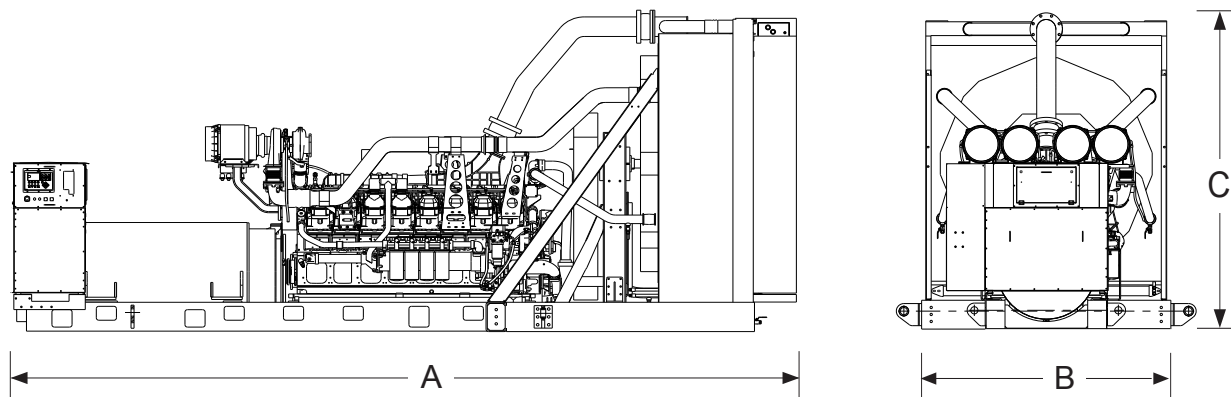
\*mg/Nm³ levels are corrected to 5% O<sub>2</sub>. Contact your local Cat dealer for further information

## Package Performance

| Performance                                                       | Standby          |           | Mission Critical |           | Prime            |           |
|-------------------------------------------------------------------|------------------|-----------|------------------|-----------|------------------|-----------|
| Engine Speed                                                      | 1500 rpm         |           | 1500 rpm         |           | 1500 rpm         |           |
| Frequency                                                         | 50 Hz            |           | 50 Hz            |           | 50 Hz            |           |
| Gen set power rating with fan                                     | 2600 ekW         |           | 2600 ekW         |           | 2360 ekW         |           |
| Gen set power rating with fan @ 0.8 power factor                  | 3250 kVA         |           | 3250 kVA         |           | 2950 kVA         |           |
| Emissions                                                         | Tier 2 (EPA ESE) |           | Tier 2 (EPA ESE) |           | Tier 2 (EPA ESE) |           |
| Performance number                                                | EM4773-07        |           | EM4779-04        |           | EM4785-05        |           |
| Fuel Consumption                                                  |                  |           |                  |           |                  |           |
| 100% load with fan – L/hr (gal/hr)                                | 683.7            | (180.6)   | 683.7            | (180.6)   | 635.9            | (168.0)   |
| 75% load with fan – L/hr (gal/hr)                                 | 544.7            | (143.9)   | 544.7            | (143.9)   | 503.3            | (132.9)   |
| 50% load with fan – L/hr (gal/hr)                                 | 369.0            | (97.5)    | 369.0            | (97.5)    | 340.1            | (89.8)    |
| 25% load with fan – L/hr (gal/hr)                                 | 209.0            | (55.2)    | 209.0            | (55.2)    | 194.7            | (51.4)    |
| Cooling System                                                    |                  |           |                  |           |                  |           |
| Radiator air flow restriction (system) – kPa (in. water)          | 0.12             | (0.48)    | 0.12             | (0.48)    | 0.12             | (0.48)    |
| Radiator air flow – m³/min (cfm)                                  | 2878             | (101635)  | 2878             | (101635)  | 2878             | (101635)  |
| Engine coolant capacity – L (gal)                                 | 179.0            | (47.3)    | 179.0            | (47.3)    | 179.0            | (47.3)    |
| Radiator coolant capacity – L (gal)                               | 202.0            | (53.4)    | 202.0            | (53.4)    | 202.0            | (53.4)    |
| Total coolant capacity – L (gal)                                  | 381.0            | (100.7)   | 381.0            | (100.7)   | 381.0            | (100.7)   |
| Inlet Air                                                         |                  |           |                  |           |                  |           |
| Combustion air inlet flow rate – m³/min (cfm)                     | 212.5            | (7502.5)  | 212.5            | (7502.5)  | 202.6            | (7155.0)  |
| Exhaust System                                                    |                  |           |                  |           |                  |           |
| Exhaust stack gas temperature – °C (°F)                           | 495.0            | (922.9)   | 495.0            | (922.9)   | 495.2            | (923.4)   |
| Exhaust gas flow rate – m³/min (cfm)                              | 578.0            | (20408.1) | 578.0            | (20408.1) | 549.3            | (19395.4) |
| Exhaust system backpressure (maximum allowable) – kPa (in. water) | 7.0              | (28.1)    | 7.0              | (28.1)    | 7.0              | (28.1)    |
| Heat Rejection                                                    |                  |           |                  |           |                  |           |
| Heat rejection to jacket water – kW (Btu/min)                     | 880              | (50024)   | 880              | (50024)   | 822              | (46767)   |
| Heat rejection to exhaust (total) – kW (Btu/min)                  | 2766             | (157294)  | 2766             | (157294)  | 2635             | (149839)  |
| Heat rejection to aftercooler – kW (Btu/min)                      | 817              | (46478)   | 817              | (46478)   | 741              | (42144)   |
| Heat rejection to atmosphere from engine – kW (Btu/min)           | 168              | (9556)    | 168              | (9556)    | 165              | (9395)    |
| Heat rejection from alternator – kW (Btu/min)                     | 113              | (6426)    | 113              | (6426)    | 88               | (5010)    |
| Emissions* (Nominal) - Full Load                                  |                  |           |                  |           |                  |           |
| NOx mg/Nm³ (g/hp-h)                                               | 2176.4           | (4.68)    | 2176.4           | (4.68)    | 1839.1           | (4.03)    |
| CO mg/Nm³ (g/hp-h)                                                | 265.8            | (0.57)    | 265.8            | (0.57)    | 319.3            | (0.70)    |
| HC mg/Nm³ (g/hp-h)                                                | 12.4             | (0.03)    | 12.4             | (0.03)    | 12.9             | (0.03)    |
| PM mg/Nm³ (g/hp-h)                                                | 11.5             | (0.03)    | 11.5             | (0.03)    | 15.7             | (0.04)    |
| Emissions* (Potential Site Variation) - Full Load                 |                  |           |                  |           |                  |           |
| NOx mg/Nm³ (g/hp-h)                                               | 2611.7           | (5.62)    | 2611.7           | (5.62)    | 2207.0           | (4.83)    |
| CO mg/Nm³ (g/hp-h)                                                | 478.4            | (1.03)    | 478.4            | (1.03)    | 574.8            | (1.27)    |
| HC mg/Nm³ (g/hp-h)                                                | 16.5             | (0.04)    | 16.5             | (0.04)    | 17.1             | (0.04)    |
| PM mg/Nm³ (g/hp-h)                                                | 16.1             | (0.04)    | 16.1             | (0.04)    | 22.0             | (0.06)    |

\*mg/Nm³ levels are corrected to 5% O<sub>2</sub>. Contact your local Cat dealer for further information

## Weights and Dimensions



| Standby Rating<br>kVA | Dim "A"<br>mm (in) | Dim "B"<br>mm (in) | Dim "C"<br>mm (in) | Dry Weight<br>kg (lb) |
|-----------------------|--------------------|--------------------|--------------------|-----------------------|
| 3500                  | 7869 (309.8)       | 2640 (104.0)       | 3342 (131.6)       | 20 707 (45,651)       |
| 3250                  | 7735 (304.5)       | 2640 (104.0)       | 3342 (131.6)       | 20 380 (44,930)       |

**Note:** For reference only. Do not use for installation design.  
Contact your local Cat dealer for precise weights and dimensions.

## Ratings Definitions

### Standby

Output available with varying load for the duration of the interruption of the normal source power. Average power output is 70% of the standby rated ekW. Typical operation is 200 hours per year, with maximum expected usage of 500 hours per year.

### Mission Critical

Output available with varying load for the duration of the interruption of the normal source power. Average power output is 85% of the mission critical rated ekW. Typical peak demand up to 100% of rated ekW for up to 5% of the operating time. Typical operation is 200 hours per year, with maximum expected usage of 500 hours per year.

### Prime

Output available with varying load for an unlimited time. Average power output is 70% of the prime rated ekW. 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.

### Applicable Codes and Standards

AS 1359, IBC, IEC 60034-1, ISO 3046, ISO 8528, NEMA MG1-22, NEMA MG1-33, 2014/35/EU, 2006/42/EC, 2014/30/EU and facilitates compliance to NFPA 37, NFPA 70, NFPA 99, NFPA 110.

**Note:** Codes may not be available in all model configurations. Please consult your local Cat dealer for availability.

### Data Center Applications

- All ratings Tier III/Tier IV compliant per Uptime Institute requirements.
- All ratings ANSI/TIA-942 compliant for Rated-1 through Rated-4 data centers.

### Fuel Rates

Fuel consumption reported in accordance with ISO 3046-1, 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 15°C (59°F) and weighing 850 g/liter (7.0936 lbs/U.S. gal.) All fuel consumption values refer to rated engine power.

[www.cat.com/electricpower](http://www.cat.com/electricpower)

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Materials and specifications are subject to change without notice.  
The International System of Units (SI) is used in this publication.