



**G3516B  
Land Electric Drilling  
Package Generator Set**

**1300 ekW  
1355 bkW  
(1818 bhp)  
1800 rpm**

**0.5 g/bhp-hr or 1.0 g/bhp-hr NOx**

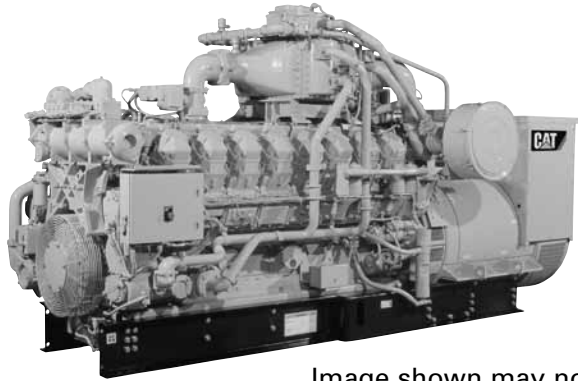


Image shown may not reflect gas drilling module

**CAT® ENGINE SPECIFICATIONS**

**V-16, 4-Stroke-Cycle Natural Gas Engine**

Bore .....	170 mm (6.7 in)
Stroke .....	190 mm (7.5 in)
Displacement .....	69 L (4210 in <sup>3</sup> )
Aspiration .....	Turbocharged-2 Stage Aftercooled
Digital Engine Management	
Governor and Protection ..	Electronic (ADEM™ A3)
Combustion .....	Low Emission (Lean Burn)
Package Weight, net dry	
(approx) .....	12 873 kg (28,380 lb)
Cooling System Capacity	
Jacket Water .....	205 L (54 U.S. gal)
Aftercooler .....	16 L (4.5 U.S. gal)
Lube System Refill .....	423 L (112 U.S. gal)

The entire drilling module is manufactured and assembled by Caterpillar, providing single-source responsibility.

**FEATURES**

**Driving Down Total Cost of Ownership**

- Robust design provides prolonged life and lower owning and operating costs
- Designed for maximum performance on low pressure pipeline natural gas
- Natural gas fuel costs are lower than diesel
- Locally sourced fuel comes from either the well field itself or from a nearby gas pipeline
- One electronic control module handles all engine functions: ignition, governing, air fuel ratio control, and engine protection
- Gas engines can be configured to run from many gases directly from the field. Some gas, depending on quality, may need to be treated prior to being injected into the cylinder. Using the locally sourced natural gas reduces fuel transport costs as well as site traffic and dust normally associated with the transportation of diesel fuel to drilling sites.
- Fuel costs contribute a significant portion of the charges incurred over the life of the engine
- Using a gas engine instead of a diesel can greatly lower the overall cost of operation

**Committed to Sustainable Development**

- Gas engines can be placed in most areas with little or no aftertreatment and reach very low emission levels
- Meets most worldwide emissions requirements down to 0.5 g/bhp-hr NOx level without aftertreatment.

**Making Your Investment Work Harder**

- Proven reliability and durability
- Rugged engine, generators, radiator, and bases are a result of years of experience in the oilfield
- Assembled, tested, and validated as a package to minimize vibration and maximize component life
- Generator designed to accommodate the rigors of oilfield applications
  - Cat® SR4B generator is designed to match performance and output characteristics of Cat engines
  - Two-bearing, anti-friction, close coupled design to provide additional robustness against alignment issues

- Packaged phase leads to withstand abrasion due to the vibration associated with a reciprocating engine
- Insulation system provides virtually twice the instantaneous surge withstand capacity by using Mica turn taped magnet wire instead of glass covered magnet wire
- Inner base fastened to outer base by a three-point mounting system
  - Inner base is attached to the outer base at three points by spring-type vibration isolators which isolate the generator set from impact loads associated with moving the generator set and distortions of the outer base resulting from rough handling
  - Three-point mounting system provides protection to the generator set’s driveline and alignment
  - Adaptable to customer designs for outer base

**Custom Packaging**

For any petroleum application, trust Caterpillar to meet your exact needs with a factory custom package. Cat engines, generators, enclosures, controls, radiators, transmissions — anything your project requires — can be custom designed and matched to create a one-of-a kind solution. Custom packages are globally supported and are covered by a one-year warranty after startup.

**Full Range of Attachments**

Large variety of factory-installed engine attachments reduces packaging time

Over 80 years of engine manufacturing experience

Ownership of these manufacturing processes enables Caterpillar to produce high quality, dependable products.

- Cast engine blocks, heads, cylinder liners, and flywheel housings
- Machine critical components
- Assemble complete engine

**Web Site**

For all your petroleum power requirements, visit [www.catoilandgasinfo.com](http://www.catoilandgasinfo.com).



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## STANDARD EQUIPMENT

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### G3516B ENGINE

#### Air Inlet System

Modular air cleaner, single element service indicator

#### Control System

Cat ADEM A3 digital engine management system

Air/fuel ratio control

Start/stop logic; gas purge cycle, stage shutdown

Transient richening and turbo bypass control

#### Cooling System

Engine-driven water pumps and thermostatic valves for jacket water and auxiliary circuits

Cat flanged connections

#### Exhaust System

Dry exhaust manifolds

Cat flanged outlet connection

#### Fuel System

Air/fuel ratio control, electronic fuel metering valve

24V gas shutoff valve, energized-to-run

#### Ignition System

Electronic ignition system, individual cylinder timing and detonation control

#### Lubrication System

Lubricating oil and filter

Integral oil cooler

Gear-type lube oil pump

Oil drain valve

Pre-lubrication pump

#### Protection System

Detonation-sensitive timing

High jacket water temperature

High oil temperature

Low oil pressure

Failure to start (overcrank)

Overspeed

Emergency stop

#### Starting/Charging System

60 amp charging alternator

Dual 24V starting motors

Batteries with rack, cables, and disconnect switch

### GENERATOR SET MOUNTING SYSTEM

#### Cat Land Rig Inner Base

Engine and generator are mounted to a fabricated structural steel base ready for integration into master package skid

Built-in three-point mounting between inner and outer base maintains engine-generator alignment on uneven surfaces and during rig moves

### GENERATOR

#### Features:

- Close-coupled mounting, independent two-bearing design
- Grease lubricated ball bearings with exciter end insulated
- Two 100 ohm RTDs installed in bearing housing for temperature monitoring (1 per bearing)
- 100% solid epoxy vacuum pressure impregnated windings with red epoxy overspray, including rotor and stator iron
- Formed stator coils with mica insulation, fully wrapped with Armor Tape
- Six 100 ohm RTDs embedded in stator windings for temperature monitoring (2 per phase)
- Commercial space heater, single-phase 250V or less
- Stand-off terminal connectors, mounted in outlet box
- Oversized auxiliary terminal box

#### Cat Digital Voltage Regulator (DVR)

Microprocessor-based control with three standard control modes for automatic voltage, power factor, or reactive power factor regulation; programmable stability settings and dual slope volts/hertz regulation

#### Features:

- Generator paralleling with reactive droop compensation and reactive differential compensation
- Line drop compensation
- Generator protection functions, including overvoltage, undervoltage, loss of excitation, instantaneous field overcurrent, over-excitation, loss of sensing, diode fault monitor

### CONTROL PANEL

#### Cat EMCPII+

24VDC panel for integrated generator control and package monitoring

#### Features:

- NEMA 1, IP22 enclosure
- Electrically dead front
- Lockable hinged door
- Generator instruments meet ANSI C-39-1
- Single-point customer connection
- Segregated AC/DC connections and wiring (EC compliant)

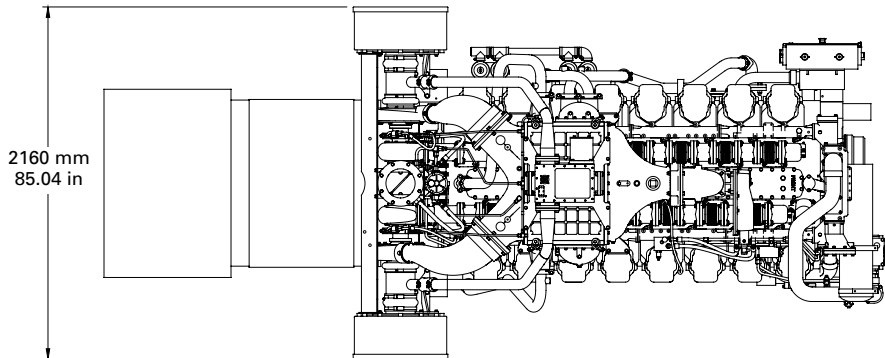




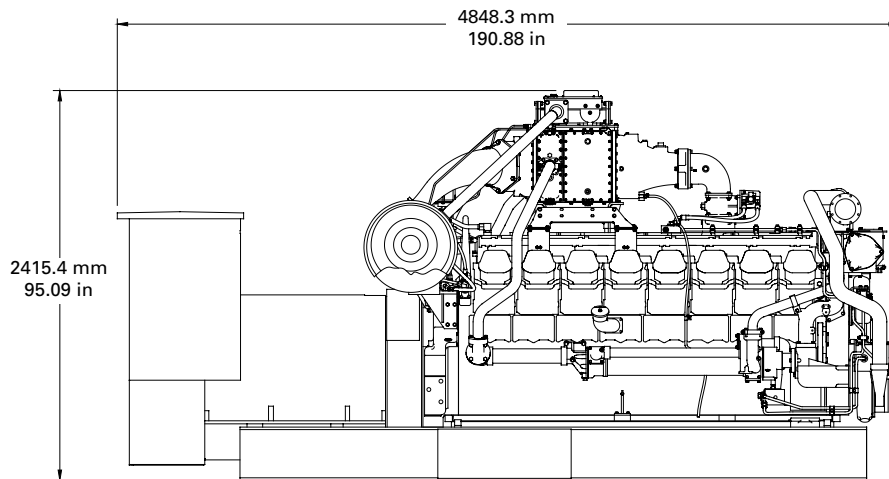
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## CONTINUOUS POWER GENERATOR SET PACKAGE — TOP VIEW



## CONTINUOUS POWER GENERATOR SET PACKAGE — SIDE VIEW



DIMENSIONS		
Length	mm (in)	4848.3 (190.88)
Width	mm (in)	2160 (85.04)
Height	mm (in)	2415.4 (95.09)
Shipping Weight	kg (lb)	12 873 (28,380)

**Note:** General configuration not to be used for installation. Dimensions are in mm (inches). Weights and dimensions will vary depending on base frame selected.

## RATING DEFINITIONS AND CONDITIONS

Engine performance is obtained in accordance with SAE J1995, ISO3046/1, BS5514/1, and DIN6271/1 standards.

Transient response data is acquired from an engine/generator combination at normal operating temperature and in accordance with ISO3046/1 standard ambient conditions. Also in accordance with SAE J1995, BS5514/1, and DIN6271/1 standard reference conditions.

**Conditions:** Power for gas engines is based on fuel having an LHV of 33.74 kJ/L (905 Btu/cu ft) at 101 kPa (29.91 in Hg) and 15°C (59°F). Fuel rate is based on a cubic meter at 100 kPa (29.61 in Hg) and 15.6°C (60.1°F). Air flow is based on a cubic foot at 100 kPa (29.61 in Hg) and 25°C (77°F). Exhaust flow is based on a cubic foot at 100 kPa (29.61 in Hg) and stack temperature.

See the Gas Drilling A&I Guide LEBW0005 for more information.

Materials and specifications are subject to change without notice. The International System of Units (SI) is used in this publication. CAT, CATERPILLAR, their respective logos, ADEM, "Caterpillar Yellow" and the "Power Edge" trade dress, as well as corporate and product identity used herein, are trademarks of Caterpillar and may not be used without permission.