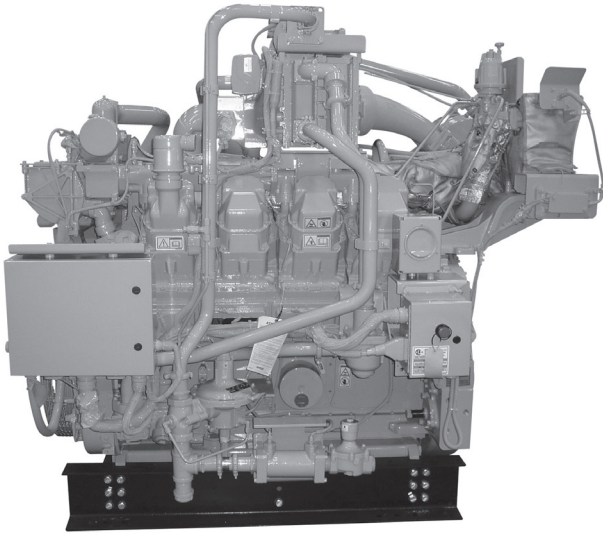




# G3508B LE Gas Petroleum Engine

515 kW (690 bhp)  
1400 rpm



## CAT® ENGINE SPECIFICATIONS

### V-8, 4-Stroke-Cycle

|                               |                                  |
|-------------------------------|----------------------------------|
| Bore                          | 170 mm (6.7 in)                  |
| Stroke                        | 190 mm (7.5 in)                  |
| Displacement                  | 34.5 L (2105 cu. in)             |
| Aspiration                    | Turbocharged-2 Stage Aftercooled |
| Digital Engine Management     |                                  |
| Governor and Protection       | Electronic (ADEM™ A3)            |
| Combustion                    | Low Emissions (Lean Burn)        |
| Engine Weight                 |                                  |
| net dry (approx)              | 5420 kg (11,950 lb)              |
| Power Density                 | 10.5 kg/kW (17.3 lb/hp)          |
| Power per Displacement        | 20 bhp/L                         |
| Total Cooling System Capacity | 125.3 L (33 gal)                 |
| Jacket Water                  | 114 L (30 gal)                   |
| Aftercooler Circuit           | 11.3 L (3 gal)                   |
| Lube Oil System (refill)      | 220 L (58 gal)                   |
| Oil Change Interval           | 1000 hours                       |
| Rotation (from flywheel end)  | Counterclockwise                 |
| Flywheel                      | SAE No. 21                       |
| Flywheel Housing              | SAE No. 00                       |
| Flywheel Teeth                | 183                              |

## FEATURES

### Engine Design

- Built on G3500 LE proven reliability and durability
- Ability to burn a wide spectrum of gaseous fuels
- Robust diesel strength design prolongs life and lowers owning and operating costs
- Broad operating speed range at lower site air densities (high altitude/hot ambient temperatures)
- Higher power density improves fleet management
- Quality engine diagnostics
- Detonation-sensitive timing control for individual cylinders

### Ultra Lean Burn Technology (ULB)

ULB technology uses an advanced control system, a better turbo match, improved air and fuel mixing, and a more sophisticated combustion recipe to provide:

- Lowest engine-out emissions
- Highest fuel efficiency
- Improved altitude and speed turndown
- Stable load acceptance and load rejection

### Emissions

- Meets U.S. EPA Spark Ignited Stationary NSPS emissions for 2010 and some non-attainment areas
- Lean air/fuel mixture provides best available emissions and fuel efficiency for engines of this bore size

### Advanced Digital Engine Management

ADEM A3 engine management system integrates speed control, air/fuel ratio control, and ignition/detonation controls into a complete engine management system. ADEM A3 has improved: user interface, display system, shutdown controls, and system diagnostics.

### Full Range of Attachments

Large variety of factory-installed engine attachments reduces packaging time.

### Testing

Every engine is full-load tested to ensure proper engine performance.

### Gas Engine Rating Pro (GERP)

GERP is a PC-based program designed to provide site performance capabilities for Cat® natural gas engines for the gas compression industry. GERP provides engine data for your site's altitude, ambient temperature, fuel, engine coolant heat rejection, performance data, installation drawings, spec sheets, and pump curves.

### Product Support Offered Through Global Cat Dealer Network

More than 2,200 dealer outlets

Cat factory-trained dealer technicians service every aspect of your petroleum engine

Cat parts and labor warranty

Preventive maintenance agreements available for repair-before-failure options

S•O•S<sup>SM</sup> program matches your oil and coolant samples against Caterpillar set standards to determine:

- Internal engine component condition
- Presence of unwanted fluids
- Presence of combustion by-products
- Site-specific oil change interval

### Over 80 Years of Engine Manufacturing Experience

Over 60 years of natural gas engine production

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.cat.com/oilandgas](http://www.cat.com/oilandgas)



## STANDARD EQUIPMENT

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### Air Inlet System

Axial Flow Air cleaner  
Cleanable  
Single element canister type with service indicator

### Control System

ADEM A3 with integrated electronic throttle control  
CSA certified

### Cooling System

Two-stage charge air cooling  
First Stage — JW + OC + 1st Stage AC  
Second Stage — 2nd Stage AC  
Thermostats and housing  
Gear-driven jacket and aftercooler water pump  
Stainless steel aftercooler cores

### Exhaust System

Dry exhaust manifolds  
Exhaust outlet: 200 mm I.D.

### Flywheels and Flywheel Housings

SAE No. 21 flywheel  
SAE No. 00 flywheel housing  
SAE standard rotation

### Fuel System

7-40 psi gas supply  
Electronic fuel metering valve  
Gas pressure regulator

### Instrumentation

Remote-mounted advisor control panel  
Interconnect harness

### Lubrication System

Crankcase breather — top mounted Oil cooler  
Oil filter — RH  
Oil pan  
Oil sampling valve  
Turbo oil accumulator

### Power Take-offs

Front housing — two-sided  
Front lower — LH accessory drive

### General

Paint — Cat yellow  
Crankshaft vibration damper and guard

## OPTIONAL EQUIPMENT

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### Air Inlet System

Round air inlet adapters

### Charging System

CSA alternator (24V, 65A)

### Cooling System

Mechanical joint assembly connections

### Exhaust System

Flexible fittings  
Elbows  
Flanges

### Fuel System

Gas filter

### Lubrication System

Lubricating oil  
Oil bypass filter  
Air prelube pump

### Power Take-offs

Front stub shaft

### Starting System

Air starting system

### General

Special paint

### EU Certification

EEC DOI certification

### Torsional Vibration Analysis



# G3508B LE GAS PETROLEUM ENGINE

515 bkW (690 bhp)

## TECHNICAL DATA

### G3508B Gas Petroleum Engine — 1400 rpm

| Fuel System  |                            | 0.5 g NOx NTE Rating<br>DM8826-03 | 1.0 g NOx NTE Rating<br>DM8827-03 |
|--|----------------------------|-----------------------------------|-----------------------------------|
| <b>Engine Power</b><br>@ 100% Load                               | bkW (bhp)                  | 515 (690)                         | 515 (690)                         |
| <b>Engine Speed</b>  | rpm                        | <b>1400</b>                       | <b>1400</b>                       |
| Max Altitude @ Rated Torque<br>and 38°C (100°F)                  | m (ft)                     | 1524 (5000)                       | 1829 (6000)                       |
| Speed Turndown @ Max Altitude,<br>Rated Torque, and 38°C (100°F) | %                          | 36                                | 36                                |
| <b>Aftercooler Temperature</b>                                   |                            |                                   |                                   |
| Stage 1 (JW)   | °C (°F)                    | 95 (203)                          | 95 (203)                          |
| Stage 2 (SCAC)   | °C (°F)                    | 54 (130)                          | 54 (130)                          |
| <b>Compression Ratio</b>   |                            | 8.0:1                             | 8.0:1                             |
| <b>Emissions*</b>  |                            |                                   |                                   |
| NOx  | g/bkW-hr (g/bhp-hr)        | 0.67 (0.50)                       | 1.34 (1.00)                       |
| CO   | g/bkW-hr (g/bhp-hr)        | 3.45 (2.58)                       | 4.01 (2.99)                       |
| CO <sub>2</sub>  | g/bkW-hr (g/bhp-hr)        | 640 (477)                         | 610 (455)                         |
| VOC**  | g/bkW-hr (g/bhp-hr)        | 0.74 (0.55)                       | 0.58 (0.43)                       |
| <b>Fuel Consumption***</b>                                       |                            |                                   |                                   |
| @ 100% Load  | MJ/bkW-hr (Btu/bhp-hr)     | 10.26 (7254)                      | 10.00 (7068)                      |
| @ 75% Load   | MJ/bkW-hr (Btu/bhp-hr)     | 10.89 (7700)                      | 10.68 (7549)                      |
| <b>Heat Balance</b>  |                            |                                   |                                   |
| Heat Rejection to Jacket Water<br>@ 100% Load                    |                            |                                   |                                   |
| JW   | bkW (Btu/min)              | 190 (10,787)                      | 195 (11,079)                      |
| OC   | bkW (Btu/min)              | 47 (2625)                         | 62 (2650)                         |
| Heat Rejection to Aftercooler<br>@ 100% Load                     |                            |                                   |                                   |
| 1st Stage AC   | bkW (Btu/min)              | 88 (5012)                         | 74 (4224)                         |
| 2nd Stage AC   | bkW (Btu/min)              | 54 (3050)                         | 49 (2765)                         |
| Heat Rejection to Exhaust<br>@ 100% Load                         | bkW (Btu/min)              | 527 (29,952)                      | 502 (28,547)                      |
| Heat Rejection to Atmosphere<br>@ 100% Load                      | bkW (Btu/min)              | 62 (3498)                         | 62 (3498)                         |
| <b>Exhaust System</b>  |                            |                                   |                                   |
| Exhaust Gas Flow Rate<br>@ 100% Load                             | m <sup>3</sup> /min (cfm)  | 126.15 (4455)                     | 120.37 (4251)                     |
| Exhaust Stack Temperature<br>@ 100% Load                         | °C (°F)                    | 500 (931)                         | 513 (955)                         |
| <b>Intake System</b>   |                            |                                   |                                   |
| Air Inlet Flow Rate<br>@ 100% Load                               | m <sup>3</sup> /min (scfm) | 45.17 (1595)                      | 42.28 (1493)                      |
| <b>Gas Pressure</b>  | kPag (psig)                | 48-276 (7-40)                     | 48-276 (7-40)                     |

\*at 100% load and speed, all values are listed as not to exceed

\*\*Volatile organic compounds as defined in U.S. EPA 40 CFR 60, subpart JJJJ

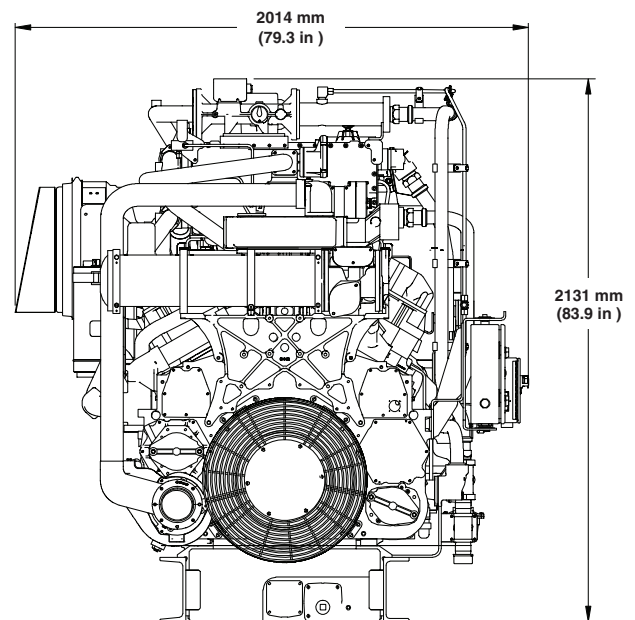
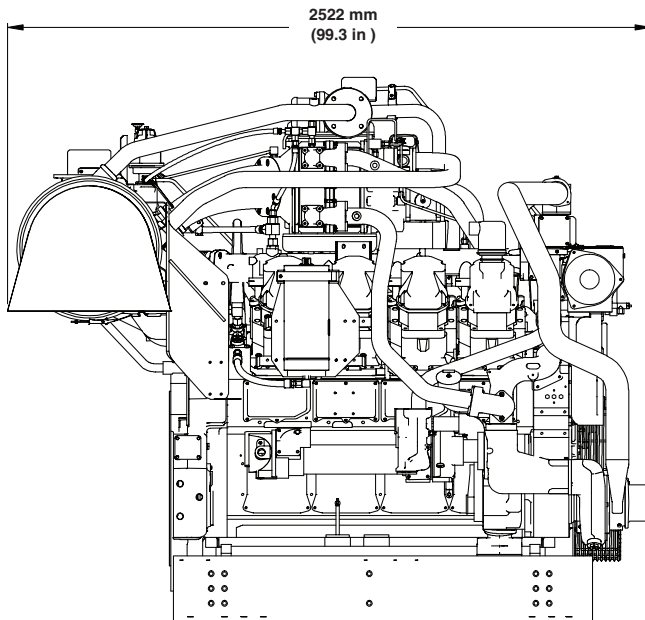
\*\*\*ISO 3046/1



# G3508B LE GAS PETROLEUM ENGINE

515 bkW (690 bhp)

## G3508B — RIGHT SIDE VIEW & FRONT VIEW



| DIMENSIONS      |         |               |
|-----------------|---------|---------------|
| Length          | mm (in) | 2522 (99.3)   |
| Width           | mm (in) | 2014 (79.3)   |
| Height          | mm (in) | 2131 (83.9)   |
| Shipping Weight | kg (lb) | 5420 (11,950) |

**Note:** General configuration not to be used for installation.

## 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.

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, S•O•S, "Caterpillar Yellow", 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.