**CAT® ENGINE SPECIFICATIONS**

**V-16, 4-Stroke-Cycle**
- **Bore**: 300 mm (11.8 in.)
- **Stroke**: 300 mm (11.8 in.)
- **Displacement**: 339.18 L (20,698 cu. in.)
- **Aspiration**: Turbocharged-Aftercooled
- **Digital Engine Management**
  - Governor and Protection: Electronic (ADEM™ A3)
  - Combustion: Low Emission (Lean Burn)
- **Engine Weight**
  - net dry (approx): 29,891 kg (65,900 lb)
- **Power Density**: 8.0 kg/kW (13.1 lb/hp)
- **Power per Displacement**: 14.9 bhp/L
- **Total Cooling System Capacity**: 972.9 L (257 gal)
- **Jacket Water**: 900.9 L (238 gal)
- **Aftercooler Circuit**: 71.9 L (19 gal)
- **Lube Oil System (refill)**: 1328.7 L (351 gal)
- **Oil Change Interval**: 5000 hours
- **Rotation (from flywheel end)**: Counterclockwise
- **Flywheel Teeth**: 255

**FEATURES**

**Engine Design**
- 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

**Emissions**
Meets U.S. EPA Spark Ignited Stationary NSPS
Emissions for 2010/11 with the use of an oxidation catalyst

**Lean Burn Engine Technology**
Lean-burn engines operate with large amounts of excess air. The excess air absorbs heat during combustion reducing the combustion temperature and pressure, greatly reducing levels of NOx. Lean-burn design also provides longer component life and excellent fuel consumption.

**Ease of Operation**
- High-strength pan and rails for excellent mounting and stability
- Side covers on block allow for inspection of internal components

**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 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•SSM™ 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.catoilandgas.cat.com.
STANDARD EQUIPMENT

Air Inlet System
Air cleaner — standard duty
Inlet air adapter

Control System
A3 control system — provides electronic governing integrated with air/fuel ratio control and individual cylinder ignition timing control

Cooling System
Jacket water pump
Jacket water thermostats and housing
Aftercooler pump
Aftercooler water thermostats and housing
Single-stage aftercooler

Exhaust System
Dry wrapped exhaust manifolds
Vertical outlet adapter

Flywheel & Flywheel Housing
SAE standard rotation

Fuel System
Gas admission valves — electronically controlled fuel supply pressure

Ignition System
A3 control system — senses individual cylinder detonation and controls individual cylinder timing

Instrumentation
LCD display panel — monitors engine parameters and displays diagnostic codes

Lube System
Crankcase breathers — top mounted
Oil cooler
Oil filter
Oil pan drain valve

Mounting System
Engine mounting feet (six total)

Protection System
Electronic shutoff system with purge cycle
Crankcase explosion relief valves
Gas shutoff valve

Starting System
Air starting system

General
Paint — Cat yellow
Vibration dampers

OPTIONAL EQUIPMENT

Air Inlet System
Heavy-duty air cleaner with precleaners
Heavy-duty air cleaner with rain protection

Charging System
Charging alternators

Control System
Custom control system software — available for non-standard ratings, field programmable using flash memory

Cooling System
Expansion tank
Flexible connections
Jacket water heater

Exhaust System
Flexible bellows adapters
Exhaust expander
Weld flanges

Fuel System
Fuel filter
Gas pressure regulator
Flexible connection
Low energy fuel system
Corrosive gas fuel system

Ignition System
CSA certification

Instrumentation
Remote data monitoring and speed control
Compatible with Cat Electronic Technician (ET) and Data View
Communication Device — PL1000T/E
Display panel deletion is optional

Lube System
Air or electric motor-driven prelube
Duplex oil filter
LH or RH service
Lube oil makeup system

Mounting System
Mounting plates (set of six)

Power Take-Offs
Front stub shafts

Starting System
Air pressure reducing valve
Natural gas starting system

General
Engine barring device
Damper guard
### TECHNICAL DATA

**G3616 LE Gas Petroleum Engine — 1000 rpm**

<table>
<thead>
<tr>
<th>Engine Power</th>
<th>DM5133-03</th>
<th>DM5563-03</th>
<th>DM5564-03</th>
<th>DM8608-02</th>
</tr>
</thead>
<tbody>
<tr>
<td>@ 100% Load</td>
<td>bkW (bhp)</td>
<td>3646 (4890)</td>
<td>3531 (4735)</td>
<td>3762 (5045)</td>
</tr>
<tr>
<td>@ 75% Load</td>
<td>bkW (bhp)</td>
<td>2735 (3668)</td>
<td>2648 (3551)</td>
<td>2882 (3784)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Engine Speed</th>
<th>rpm</th>
<th>1000</th>
<th>1000</th>
<th>1000</th>
<th>1000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max Altitude @ Rated Torque and 38°C (100°F)</td>
<td>m (ft)</td>
<td>1219.2 (4000)</td>
<td>609.6 (2000)</td>
<td>1219.2 (4000)</td>
<td>609.6 (2000)</td>
</tr>
<tr>
<td>Speed Turndown @ Max Altitude, Rated Torque, and 38°C (100°F)</td>
<td>%</td>
<td>20</td>
<td>24</td>
<td>20</td>
<td>24</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SCAC Temperature</th>
<th>°C (°F)</th>
<th>43 (110)</th>
<th>54 (130)</th>
<th>32 (90)</th>
<th>54 (130)</th>
</tr>
</thead>
</table>

| Emissions* | | | | |
| NOx | g/bkW-hr (g/bhp-hr) | .94 (0.7) | .94 (0.7) | .94 (0.7) | .67 (0.5) |
| CO | g/bkW-hr (g/bhp-hr) | 3.4 (2.5) | 3.4 (2.5) | 3.4 (2.5) | 3.7 (2.75) |
| CO2 | g/bkW-hr (g/bhp-hr) | 585 (436) | 587 (437) | 583 (435) | 589 (439) |
| VOC** | g/bkW-hr (g/bhp-hr) | 0.78 (0.58) | 0.81 (0.6) | 0.76 (0.57) | 0.85 (0.63) |

| Fuel Consumption*** | | | | |
| @ 100% Load | MJ/bkW-hr (Btu/bhp-hr) | 9.28 (6556) | 9.3 (6576) | 9.25 (6537) | 9.35 (6605) |
| @ 75% Load | MJ/bkW-hr (Btu/bhp-hr) | 9.67 (6834) | 9.71 (6863) | 9.63 (6805) | 9.75 (6893) |

| Heat Balance | | | | |
| Heat Rejection to Jacket Water | | | | |
| @ 100% Load | bkW (Btu/min) | 869 (49,438) | 842 (47,922) | 894 (50,884) | 842 (47,935) |
| @ 75% Load | bkW (Btu/min) | 764 (43,434) | 730 (41,488) | 798 (45,348) | 735 (41,766) |
| Heat Rejection to Aftercooler | | | | |
| @ 100% Load | bkW (Btu/min) | 660 (37,526) | 578 (32,889) | 744 (42,366) | 602 (34,290) |
| @ 75% Load | bkW (Btu/min) | 317 (18,044) | 261 (14,841) | 376 (21,397) | 274 (15,569) |
| Heat Rejection to Exhaust LHV to 25°C (77° F) | | | | |
| @ 100% Load | bkW (Btu/min) | 3627 (206,280) | 3596 (204,497) | 3655 (207,837) | 3609 (205,248) |
| @ 75% Load | bkW (Btu/min) | 2927 (166,440) | 2916 (165,846) | 2933 (166,812) | 2928 (166,501) |

| Exhaust System | | | | |
| Exhaust Gas Flow Rate | | | | |
| @ 100% Load | m³/min (cfm) | 913.87 (32,273) | 898.35 (31,725) | 928.85 (32,802) | 908.97 (32,100) |
| @ 75% Load | m³/min (cfm) | 726.21 (25,646) | 716.90 (25,317) | 734.94 (25,954) | 725.36 (25,616) |
| Exhaust Stack Temperature | | | | |
| @ 100% Load | °C (°F) | 461 (862) | 469 (876) | 453 (847) | 458 (856) |
| @ 75% Load | °C (°F) | 481 (888) | 492 (918) | 469 (877) | 481 (897) |

| Intake System | | | | |
| Air Inlet Flow Rate | | | | |
| @ 100% Load | m³/min (scfm) | 348.10 (12,293) | 338.47 (11,953) | 357.73 (12,633) | 348.13 (12,294) |
| @ 75% Load | m³/min (scfm) | 269.12 (9504) | 261.76 (9244) | 276.49 (9764) | 269.21 (9507) |

<table>
<thead>
<tr>
<th>Gas Pressure</th>
<th>kPag (psig)</th>
<th>295-324</th>
<th>295-324</th>
<th>295-324</th>
<th>295-324</th>
</tr>
</thead>
</table>

* 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
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.

**Note:** General configuration not to be used for installation. See general dimension drawing number 246-1515 for detail.

**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.