

GAS GENERATOR SET

CATERPILLAR®

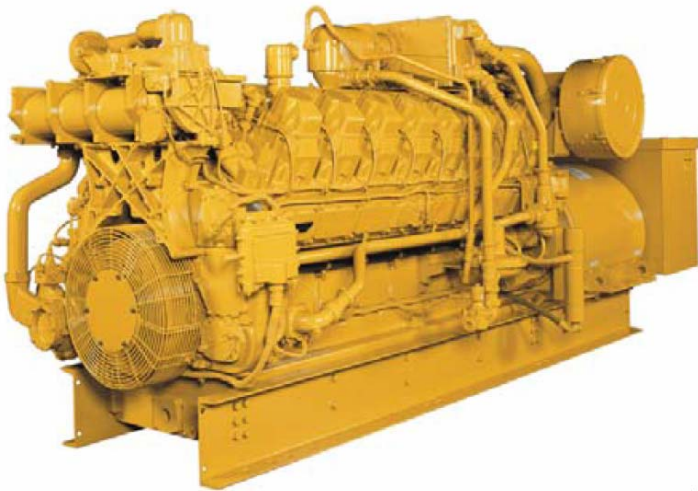


Image shown may actual package not reflect

G3516 LE

NATURAL GAS

CONTINUOUS

975 ekW 1219 kVA /

1030 ekW 1288 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.

BENEFITS

EMISSIONS

- * Meets most worldwide emissions requirements down to 250 mg/ NM³ NO_x level without after treatment

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.

PROVEN SYSTEM

- * Fully pro-type tested.
- * Field proven in a wide range of applications worldwide.
- * Certified torsional vibration analysis available.

WORLDWIDE PRODUCT SUPPORT

- * Caterpillar dealers have over 1,600 dealer branch stores operating in 200 countries.
- * Comprehensive post-sales support including maintenance and repair agreements that are tailored for your specific equipment and application
- * Highly-skilled technicians are trained to service every aspect of your electric power generation system.
- * The CAT® S.O.SSM Program cost effectively detects internal engine component condition, even the presence of unwanted fluids and combustion by-products; providing the capability to maximize product performance and minimize owning and operating costs.

CAT® G3516 LEAN BURN GAS ENGINE

- * Robust high speed diesel block design provides prolonged life and lower owning operating costs.
- * Designed for maximum performance on low pressure gaseous fuel supply.
- * Simple open chamber combustion system for reliability and fuel flexibility.
- * Leading edge technology in ignition system and air/fuel ratio control for lower emission and engine efficiency.
- * One electronic control module handles all engine functions: ignition, governing, air/fuel ratio control and engine protection.

CAT SR4B GENERATOR

- * Designed to match performance and output characteristics of Caterpillar gas engines.
- * Industry leading mechanical and electrical design.
- * High efficiency.

CAT EMCP II+ CONTROL PANEL

- * Simple user friendly interface and navigation.
- * Digital monitoring, metering and protection setting.
- * Fully-featured power metering and protective relaying.
- * UL 508A Listed.
- * Remote control and monitor capability options.

Factory Installed Standard & Optional Equipment

System	Standard	Optional
Air Inlet	Air cleaner; intermediate duty with service indicator.	Ship-loose air cleaner Air inlet adapter
Control Panel	EMCP II+ Instrument panel on engine	Communications Module (PL1000T, PL1000E) Alarm module, Customer interface module Synchronizing module
Cooling	Combined jacket water and oil cooler circuit Engine driven JW pump; Thermostats and housing Separate aftercooler circuit Single-stage for wet manifold; Two-stage for dry manifold Engine driven AC pump; Second-stage thermostat and housing	Corrosion resistant aftercooler Raw water aftercooler Temperature regulator for high temperature cooling (option for a cogeneration system) Inlet/Outlet connections. Expansion and overflow tank Water level switch gauge
Exhaust	Dry exhaust manifold for low emission	Flexible fitting; Elbow; Flange and Expander Muffler and spark-arresting muffler with companion flanges.
Fuel	Gas pressure regulator Requires 10.3 to 34.5 kPa (1.5 to 5 psi) supplied gas pressure Natural gas carburetor for standard emission Dual rear inlet connections Deltec natural gas carburetor for low emission (31 to 35 MJ/Nm ³ venturi standard) RH inlet connection Fuel system is sized for 31.5 to 47.2 MJ/Nm ³ (800 to 1200 Btu/scf)	High Btu carburetor mixer Gas filter Gas shutoff valve
Generator	SR4B generator, includes: PM excited, form wound with Class H insulation Stator RTDs Caterpillars Digital Voltage Regulator (CDVR) including KVAR/ PF control Space heater	Set mounted circuit breakers Medium voltage generator Bearing temperature detectors (RTD) Low voltage extension box, Cable access box Air filter for generator, European bus bar
Governing	Woodward 2301A Speed Control for standard emission Woodward ProAct Speed Control for low emission	Ship-loose 2301A Speed Controller 2301A load sharing governor, 2301D dual gain governor 8290 load sharing module
Ignition	Caterpillar Electronic Ignition System (E. I. S.) including detonation sensing timing	
Lubrication	Crankcase breather; top mounted; Oil cooler, Oil filter, Shallow oil pan	Oil level regulator, Oil pan drain valve Sump pump, Prelube pump, Lubricating oil
Mounting	330 mm, industrial type rail, engine-generator mounting	Spring type vibration Isolators Rubber type isolator pad
Protection	Shutoff solenoid; 24VDC, ETR ; Detonation Shutdown	
Starting / Charging	Dual 24 VDC starting motors	Battery charger Charging alternator, Battery set, cable and rack; Oversized battery; Lacket water heater;
General	Paint-- Caterpillar Yellow (engine and generator) Crankshaft vibration damper and guard, Lifting eyes Operation and Maintenance Manuals; Parts Book.	EEC D. O. I certification Crankcase explosion relief valve Engine barring group

SPECIFICATIONS

CAT LEAN BURN GAS ENGINE

G3516 LE SCAC 4-stroke-cycle water-cooled gas engine

Number of CylindersV16
Bore --- mm (in)170 (6.7)
Stroke --- mm (in)190 (7.5)
Displacement --- L (cu in)69(4210)
Compression Ratio 11:1
AspirationTurbocharged Separate Circuit After-cooled
Cooling Type.....JW & O/C combined, SCAC
Fuel SystemLow Pressure
Governor TypeWoodward ProAct II

CAT SR4B GENERATOR

Frame size.....697
Excitation.....Permanent Magnet
Pitch.....0.7333
Number of poles.....4
Number of bearings 1
Number of leads6
InsulationClass H
IP rating.....Drip proof IP22
AlignmentPilot shaft
Overspeed capability -- % of synchronous speed125%
Waveform deviation line to line, no loadless than 3.0%
Voltage regulatorCDVR
Voltage level adjustment.....+/- 0.5%
Voltage regulation with 3% speed change.....+/- 0.5%
Telephone Influence Factor (TIF)Less than 50

CAT EMCPII+ CONTROL PANEL

- * Power by 24 volts DC
- * NEMA 12, IP44 dust-proof enclosure
- * Lockable hinged door
- * Single-location customer connection
- * Auto start/stop control switch
- * Voltage adjustment potentiometer
- * True RMS AC metering, 3 phase
- * Purge cycle and staged shutdown logic
- * Digital indication for:
 - RPM
 - Operating hours
 - Oil pressure
 - Coolant temperature
 - DC voltage
 - L-L volts, L-N volts, phase amps, Hz, ekW, kVA, kVAR, kW-hr, %kW, pf
 - System diagnostic codes
- * Shutdown with indicating lights;
 - Low oil pressure
 - High coolant temperature
 - High oil temperature
 - Overspeed
 - Overcrank
 - Emergency stop
 - High inlet air temperature (for TA engine only)
 - Detonation sensitive timing (for LE engine only)
- * Programmable protective relaying functions:
 - Under / over voltage
 - Under / over frequency
 - Over-current
 - Reverse power
- * Spare indicator LEDs
- * Spare alarm/ shutdown inputs

TECHNICAL DATA

G3516 Gas Generator Set	DM 0991-02	DM 0990-00
--------------------------------	-------------------	-------------------

Package Performance (1)

Power Rating @ 0.8 pf (w/water pumps and w/o fan)	kVA	Continuous	1219	1288
Power Rating @ 0.8 pf (w/water pumps and w/o fan)	ekW	Continuous	975	1030
Power Rating @ 1.0 pf (w/water pumps and w/o fan)	ekW	Continuous	983	1039
Electric Efficiency @ 1.0 pf (ISO 3046/1) (5)	%		36.1	37.7
Mechanical Power w/o water pumps and w/o fan)	bkW		1010	1070

Fuel Consumption (3)

100% load	NM ³ /hr	279	287
75% load	NM ³ /hr	216	222
50% load	NM ³ /hr	152	155

Altitude Capability

At 25 Deg C Ambient	M (above sea level)	500	500
---------------------	---------------------	-----	-----

Cooling System

Ambient Air Temperature	Deg C	25	25
After Cooler Inlet Temperature	Deg C	54	32
Jacket Water Temperature (maximum outlet)	Deg C	99	99

Exhaust System

Combustion Air Inlet Flow Rate	Nm ³ /min	75.58	75.44
Exhaust Gas Stack Temperature	Deg C	534	507
Exhaust Gas Flow Rate	Nm ³ /min	81.13	80.79
Exhaust Flange Size (internal diameter)	mm	300	300

Heat Rejection (5)

Heat Rejection to Jacket Water	kW	440	527
Heat Rejection to A/C	kW	162	190
Heat Rejection to Exhaust (LHV to 25 Deg C)	kW	1021	1160
Heat Rejection to Exhaust (LHV to 177 Deg C)	kW	791	735
Heat Rejection to Atmosphere	kW	76	100

Generator

Frame		697	697
Temperature Rise	Deg C	105	105
Motor Starting Capability @ 30% Voltage Dip (6)	skVA	2259	2259

Lubrication System

Standard Sump Refill with Filter Change	L	423	423
Lube oil consumption	g / bkW-hr	0.3	0.3

Emissions (7)

Lambda		1.66	1.64
NOx @ 5% O ₂	mg/NM ³ (dry)	500	500
CO @ 5% O ₂	mg/NM ³ (dry)	1093	1166
THC @ 5% O ₂	mg/NM ³ (dry)	1953	2084
NMHC @ 5% O ₂	mg/NM ³ (dry)	293	313
Exhaust O ₂ (dry)	% (dry)	9.5	9.4

DEFINITIONS AND CONDITIONS

(1) **Continuous** --- Maximum output available for an unlimited time

Ratings are based on pipeline natural gas having a Low Heat Value (LHV) of 36 MJ/NM³ (915 Btu/ ft³) and 80 Caterpillar Methane Number. For values in excess of altitude, ambient temperature, inlet/ exhaust restriction or different from the conditions listed, contact your local Caterpillar dealer.

(2) **Efficiency** of standard generator is used. For higher efficiency generators, contact your local Caterpillar dealer.

(3) **Ratings and fuel consumption** are based on ISO3046/1 standard reference conditions of 25 deg C (77 deg F) of ambient temperature and 100 kPa (29.61 in Hg) of total barometric pressure, 30% relative humidity with 0, +5% fuel tolerance.

(4) **Altitude** capability is based on 2.5 kPa air filter and 5.0 kPa exhaust stack restrictions.

(5) **Heat Rejection** -- Values based on nominal data with fuel tolerance of +/-2.5% and 2.5 kPa inlet and 5.0 kPa exhaust restrictions.

(6) Assume synchronous driver.

(7) **Emissions data** measurements 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 engine operating conditions of 25 deg C (77 deg F), 96.28 kPa (28.43 in Hg) and fuel having a LHV of 35.6 MJ/NM³ (905 Btu/cu ft) and 80 Caterpillar Methane Number at 101.60 kPa (30.00 in Hg) absolute and 0 deg C (32 deg F). Emission data shown is subject to instrumentation, measurement, facility, and engine

Package Dimensions		
Length	4917.0 mm	193.58 in
Width	2204.8 mm	86.8 in
Height	2011.7 mm	79.20 in
Est. Shipping Weight	11 813 kg	26 043 lb

Note: Do not use for installation design.
 See general dimension drawings
 for detail (Drawing # 201-9599).