

## GAS GENERATOR SET

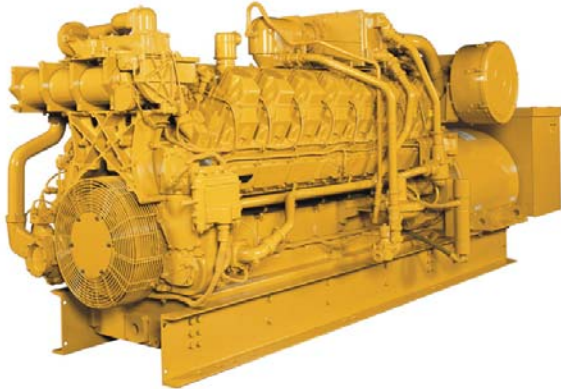


Image shown may not reflect actual package

**NATURAL GAS  
CONTINUOUS  
975 ekW 1218 kVA /  
1030 ekW 1287 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

#### FULL RANGE OF ATTACHMENT

- Wide range of bolt-on system expansion attachments, factory designed and tested.
- Flexible packaging options for easy and cost effective installation.

#### PROVEN SYSTEM

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

#### WORLDWIDE PRODUCT SUPPORT

- Caterpillar dealers provide extensive post sales support including maintenance and repair agreements
- Caterpillar dealers have over 1,600 dealer branch stores operating in 200 countries
- The CAT<sup>®</sup> S.O.S<sup>SM</sup> program cost effectively detects internal engine component condition, even the presence of unwanted fluids and combustion by-products

#### CAT<sup>®</sup> G3516 LEAN BURN GAS ENGINE

- Robust high speed diesel block design provides prolonged life and lower owning and operating costs
- Designed for maximum performance on low pressure gaseous fuel supply.
- Simple open chamber combustion system for reliability and fuel flexibility.

#### 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
<b>Air Inlet</b>	Air cleaner; intermediate duty with service indicator	Ship-loose air cleaner Air inlet adapter
<b>Control</b>	EMCP II+ Instrument panel on engine	Communications Module (PL1000T, PL1000E) Alarm module Customer interface module Synchronizing module
<b>Cooling</b>	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
<b>Exhaust</b>	Wet exhaust manifold for standard emission Dry exhaust manifold for low emission	Flexible fitting; Elbow; Flange and Expander Muffler and spark-arresting muffler with companion flanges.
<b>Fuel</b>	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 <sup>3</sup> venturi standard) RH inlet connection Fuel system is sized for 31.5 to 47.2 MJ/Nm <sup>3</sup> (800 to 1200 Btu/scf)	High Btu carburetor mixer Gas filter Gas shutoff valve
<b>Generator</b>	SR4B generator, includes: PM excited, form wound with Class H insulation Stator RTDs Caterpillar's 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
<b>Governing</b>	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
<b>Ignition</b>	Caterpillar Electronic Ignition System (E.I.S.) including detonation sensing timing	
<b>Lubrication</b>	Crankcase breather; top mounted Oil cooler Oil filter Shallow oil pan	Oil level regulator Oil pan drain valve Sump pump Prelube pump Lubricating oil
<b>Mounting</b>	330 mm, industrial type rail, engine-generator mounting	Spring type vibration Isolators Rubber type isolator pad
<b>Protection</b>	Shutoff solenoid; 24VDC, ETR Detonation shutdown	
<b>Starting / Charging</b>	Dual 24 VDC starting motors	Battery charger; Charging alternator Battery set, cable and rack Oversized battery; Lacket water heater;
<b>General</b>	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, spark-ignited engine	
Number of Cylinders	V16
Bore --- mm (in)	170 (6.7)
Stroke --- mm (in)	190 (7.5)
Displacement --- L (cu in)	69 (4210)
Compression Ratio (516GEX1 & 516GEX4)	11:01
Compression Ratio (516GEX6)	12:01
Aspiration	Turbocharged Separate Circuit Aftercooled
Cooling Type (516GEX1)	JW & O/C combined, SCAC
Cooling Type (516GEX4)	JW & O/C combined, two stage SCAC
Cooling Type (516GEX6)	JW & O/C combined, two stage SCAC
Fuel System	Low Pressure
Governor Type (516GEX1)	Woodward 2301A
Governor Type (516GEX4 & 516GEX6)	Woodward ProAct II

### CAT SR4B GENERATOR

Frame size	697
Excitation	Permanent Magnet
Pitch	0.7333
Number of poles	4
Number of bearings	1
Number of leads	6
Insulation	Class H
IP rating	Drip proof IP22
Alignment	Pilot shaft
Overspeed capability -- % of rated	125%
Waveform deviation line to line, no load	less than 3.0%
Voltage regulator	CDVR
Voltage level adjustment	+/- 5.0%
Voltage regulation, steady state	+/- 0.5%
Voltage regulation with 3% speed change	+/- 0.5%
Telephone Influence Factor (TIF)	less than 50

**Consult your Caterpillar dealer for available voltage**

### 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
- Pruge 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, kW, kVA, kVAR, kWhr, %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
  - Overcurrent
  - Reverse power
- Spare indicator LEDs
- Spare alarm/shutdown inputs

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

**TECHNICAL DATA**

G3516 Gas Generator Set		Feature Code 516GEX1	
		DM 5671	DM 5158
Emission level (NOx)	mg/Nm <sup>3</sup>	Standard Emission	Standard Emission
Aftercooler SCAC	Deg C	32	54
<b>Package Performance (1)</b>			
Power Rating @ 0.8 pf (w/ water pumps and w/o fan)	ekW Continuous	1030	975
Power Rating @ 0.8 pf (w/ water pumps and w/o fan)	kVA Continuous	1287	1218
Power Rating @ 1.0 pf (w/ water pumps and w/o fan)	ekW Continuous	1039	982
Electric Efficiency @ 1.0 pf (ISO 3046/1) (2)	%	35.4	34.1
Mechanical Power (w/ water pumps and w/o fan)	bkW	1070	1011
<b>Fuel Consumption (3)</b>			
100% load w/o fan	Nm <sup>3</sup> /hr	297	292
75% load w/o fan	Nm <sup>3</sup> /hr	236	230
50% load w/o fan	Nm <sup>3</sup> /hr	166	164
<b>Altitude Capability</b>			
At 25 Deg C (77 Deg F) ambient, above sea level	M	1524	1524
<b>Cooling System</b>			
Ambient air temperature	Deg C	25	25
Jacket water temperature ( Maximum outlet )	Deg C	99	99
<b>Exhaust System</b>			
Combustion air inlet flow rate	Nm <sup>3</sup> /min	73.5	71.8
Exhaust stack gas temperature	Deg C	448	453
Exhaust gas flow rate	Nm <sup>3</sup> /min	78.6	77.2
<b>Heat Rejection</b>			
Heat rejection to jacket water and oil cooler	kW	807	815
Heat rejection to AC	kW	196	152
Heat rejection to exhaust (LHV to 25 Deg C)	kW	798	803
Heat rejection to exhaust (LHV to 120 Deg C)	kW	608	602
Heat rejection to atmosphere from engine	kW	100	100
Heat rejection to atmosphere from generator	kW	40.7	38.5
<b>Generator</b>			
Frame		697	697
Temperature rise	Deg C	105	105
Motor starting capability @ 30% voltage dip (4)	skVA	2259	2259
<b>Emissions (5)</b>			
NOx @ 5% O2 (dry)	mg/Nm <sup>3</sup>	860	834
CO @ 5% O2 (dry)	mg/Nm <sup>3</sup>	854	812
THC @ 5% O2 (dry)	mg/Nm <sup>3</sup>	1200	1164
NMHC @ 5% O2 (dry)	mg/Nm <sup>3</sup>	180	175
Exhaust O2 (dry)	%	8.1	8.1



**TECHNICAL DATA**

G3516 Gas Generator Set		516GEX4	516GEX6	
		DM 0989	DM 5665	DM 5668
Emission level (NOx)	mg/Nm <sup>3</sup>	250	500	250
Aftercooler SCAC, Stage 1	Deg C	70	70	70
Aftercooler SCAC, Stage 2	Deg C	32	32	32
<b>Package Performance (1)</b>				
Power Rating @ 0.8 pf (w/ water pumps and w/o fan)	ekW Continuous	1030	1030	1030
Power Rating @ 0.8 pf (w/ water pumps and w/o fan)	kVA Continuous	1287	1287	1287
Power Rating @ 1.0 pf (w/ water pumps and w/o fan)	ekW Continuous	1039	1039	1039
Electric Efficiency @ 1.0 pf (ISO 3046/1) (2)	%	35.2	37.7	36.7
Mechanical Power (w/ water pumps and w/o fan)	bkW	1070	1070	1070
<b>Fuel Consumption (3)</b>				
100% load w/o fan	Nm <sup>3</sup> /hr	298	279	286
75% load w/o fan	Nm <sup>3</sup> /hr	231	219	227
50% load w/o fan	Nm <sup>3</sup> /hr	163	155	162
<b>Altitude Capability</b>				
At 25 Deg C (77 Deg F) ambient, above sea level	M	350	500	350
<b>Cooling System</b>				
Ambient air temperature	Deg C	25	25	25
Jacket water temperature ( Maximum outlet )	Deg C	99	99	99
<b>Exhaust System</b>				
Combustion air inlet flow rate	Nm <sup>3</sup> /min	82.2	74.5	78.6
Exhaust stack gas temperature	Deg C	508	489	485
Exhaust gas flow rate	Nm <sup>3</sup> /min	87.4	79.9	84.2
<b>Heat Rejection</b>				
Heat rejection to jacket water and oil cooler	kW	525	489	512
Heat rejection to AC - Stage 1	kW	140	110	127
Heat rejection to AC - Stage 2	kW	83	76	71
Heat rejection to exhaust (LHV to 25 Deg C)	kW	1050	934	987
Heat rejection to exhaust (LHV to 120 Deg C)	kW	801	712	741
Heat rejection to atmosphere from engine	kW	115	81	77
Heat rejection to atmosphere from generator	kW	40.7	40.7	40.7
<b>Generator</b>				
Frame		697	697	697
Temperature rise	Deg C	105	105	105
Motor starting capability @ 30% voltage dip (4)	skVA	2259	2259	2259
<b>Emissions (5)</b>				
NOx @ 5% O2 (dry)	mg/Nm <sup>3</sup>	250	500	250
CO @ 5% O2 (dry)	mg/Nm <sup>3</sup>	1229	1118	1180
THC @ 5% O2 (dry)	mg/Nm <sup>3</sup>	2504	2169	3014
NMHC @ 5% O2 (dry)	mg/Nm <sup>3</sup>	376	326	453
Exhaust O2 (dry)	%	9.9	9.4	9.9

## DEFINITIONS AND CONDITIONS

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

**Ratings** are based on pipeline natural gas having a Low Heat Value (LHV) of 35.6 MJ/Nm<sup>3</sup> (905 Btu/ft<sup>3</sup>) 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.

(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, NO<sub>x</sub>. 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/NM<sup>3</sup> (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 fuel system adjustment.

**CONTINUOUS 975 ekW 1218 kVA / 1218 ekW 1287 kVA**  
50 Hz 1500 rpm 400 Volts



## DIMENSIONS

Package Dimensions		
Length	4917.0 mm	193.58 in
Width	2204.8 mm	86.80 in
Height	2011.7 mm	79.20 in
Approx. Shipping Weight	11 813 kg	26 043 lb

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

**Performance Numbers :** DM5671, DM5158  
DM0989, DM5665  
DM5668  
**Feature Codes:** 516GEX1  
516GEX4  
516GEX6  
**Generator Argt:** 144-1814  
**Source:** US Sourced

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The International System of Units (SI) is used in this publication

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