



Image shown may not reflect actual package

## NATURAL GAS CONTINUOUS 1900 eKW 2375 kVA 60 Hz 1800 rpm 480 Volts

Caterpillar is leading the power generation market place with power solutions engineered to deliver unmatched performance, reliability, durability and cost-effectiveness.

## BENEFITS

### EMISSIONS

- Meets most worldwide emissions requirements down to 0.5 g/bhp-hr NO<sub>x</sub> 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 prototype tested
- Field proven in a wide 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® 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® G3520C GAS ENGINE

- Robust high speed block design provides prolonged life and lower owning and operating costs
- Designed for maximum performance on low pressure gas 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
<b>Gas Engine Control Module (GECM)</b>	<ul style="list-style-type: none"> <li>Fuel/air ratio control</li> <li>Start/stop logic: gas purge cycle, staged shutdown</li> <li>Engine Protection System: detonation sensitive timing, high exhaust temperature shutdown</li> <li>Governor: Transient richening and turbo bypass control</li> <li>Ignition</li> <li>Island Mode Feature — additional engine control module, new software and engine sensors</li> </ul>	
<b>Air Inlet</b>	<ul style="list-style-type: none"> <li>Two element, single-stage air cleaner with enclosure and service indicator</li> </ul>	<ul style="list-style-type: none"> <li>Air cleaner with precleaner</li> <li>Mounting stand</li> </ul>
<b>Control Panel</b>	<ul style="list-style-type: none"> <li>EMCP II+</li> </ul>	<ul style="list-style-type: none"> <li>Local alarm module</li> <li>Remote annunciator</li> <li>Communications Module (PL1000T, PL1000E)</li> <li>Synchronizing module</li> <li>Engine failure relay</li> </ul>
<b>Cooling</b>	<ul style="list-style-type: none"> <li>Engine driven water pumps for jacket water and aftercooler</li> <li>Jacket water and SCAC thermostats</li> <li>ANSI/DN customer flange connections for JW inlet and outlet Cat flanges on SCAC circuit</li> </ul>	<ul style="list-style-type: none"> <li>Coolant level drain line with valves, fan with guard</li> <li>Inlet/Outlet connections</li> </ul>
<b>Exhaust</b>	<ul style="list-style-type: none"> <li>Dry exhaust manifolds, insulated and shielded</li> <li>Center section cooled turbocharger with Cat flanged outlet</li> <li>Individual exhaust port and turbocharger outlet wired to</li> <li>Integrated Temperature Sensing Module (ITSM) with GECM providing alarms and shutdowns</li> </ul>	<ul style="list-style-type: none"> <li>Flange</li> <li>Exhaust expander</li> <li>Elbow</li> <li>Flexible fitting</li> <li>Muffler and spark-arresting muffler with companion flanges</li> </ul>
<b>Fuel</b>	<ul style="list-style-type: none"> <li>Electronic fuel metering valve</li> <li>Throttle plate, 24V DC actuator, controlled by GECM</li> <li>Fuel system is sized for 31.5 to 47.2 MJ/Nm<sup>3</sup> (800 to 1200 Btu/cu ft) dry pipeline natural gas with pressure of 10.2 to 34.5 kPa (1.5 to 5 psi) to the engine fuel control valve</li> </ul>	<ul style="list-style-type: none"> <li>Fuel filter</li> <li>Gas pressure regulator</li> <li>Gas shutoff valve, 24V, ETR (Energized-To-Run)</li> </ul>
<b>Generator</b>	<ul style="list-style-type: none"> <li>SR4B generator, includes: Caterpillar's Digital Voltage Regulator (CDVR) with 3-phase sensing and KVAR/PF control</li> <li>Reactive droop</li> <li>Bus bar connections</li> <li>Winding temperature detectors</li> <li>Anti-condensation space heater</li> </ul>	<ul style="list-style-type: none"> <li>Medium and high voltage generators and attachments</li> <li>Low voltage extension box</li> <li>Cable access box</li> <li>Air filter for generator</li> <li>Bearing temperature detectors</li> <li>Manual voltage control</li> <li>European bus bar</li> </ul>
<b>Governing</b>	<ul style="list-style-type: none"> <li>Electronic speed governor as part of GECM</li> <li>Electronically-controlled 24V DC actuator connected to throttle shaft.</li> </ul>	<ul style="list-style-type: none"> <li>Woodward load sharing module</li> </ul>
<b>Ignition</b>	<ul style="list-style-type: none"> <li>Electronic Ignition System controlled by GECM</li> <li>Individual cylinder Detonation Sensitive Timing (DST)</li> </ul>	
<b>Lubrication</b>	<ul style="list-style-type: none"> <li>Lubricating oil</li> <li>Gear type lube oil pump</li> <li>Oil filter, filler and dipstick</li> <li>Integral lube oil cooler</li> <li>Oil drain valve</li> <li>Crankcase breather</li> </ul>	<ul style="list-style-type: none"> <li>Oil level regulator</li> <li>Prelube pump</li> <li>Positive crankcase ventilation system</li> </ul>
<b>Mounting</b>	<ul style="list-style-type: none"> <li>330 mm structural steel base (for low and medium voltage units)</li> <li>Spring-type anti-vibration mounts (shipped loose)</li> </ul>	
<b>Starting/Charging</b>	<ul style="list-style-type: none"> <li>24V starting motors</li> <li>Battery with cables and rack (shipped loose)</li> <li>Battery disconnect switch</li> <li>60A, 24V charging alternator (standard on 60 Hz 1,800 rpm only)</li> </ul>	<ul style="list-style-type: none"> <li>Charging alternator</li> <li>Battery charger</li> <li>Oversized battery</li> <li>Jacket water heater</li> </ul>
<b>General</b>	<ul style="list-style-type: none"> <li>Paint — Caterpillar Yellow except rails &amp; radiators</li> <li>Damper guard</li> <li>Operation and Maintenance Manuals</li> <li>Parts Book</li> </ul>	<ul style="list-style-type: none"> <li>Crankcase explosion relief valve</li> <li>Engine barring group</li> <li>EEC D.O.I and other certifications</li> </ul>

## SPECIFICATIONS

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### CAT GAS ENGINE

G3520C SCAC 4-stroke-cycle watercooled gas engine  
Number of Cylinders ..... V20  
Bore — mm (in) ..... 170 (6.7)  
Stroke — mm (in) ..... 190 (7.5)  
Displacement — L (cu in) ..... 86.3 (5,266)  
Compression Ratio ..... 11.3:1  
Aspiration .. Turbocharged Separate Circuit Aftercooled  
Cooling Type ..... Two stage aftercooler,  
JW + O/C + A/C 1 combined  
Fuel System ..... Low pressure  
Governor Type ..... Electronic (ADEM™ III)

### CAT SR4B GENERATOR

Frame size ..... 827  
Excitation ..... Permanent Magnet  
Pitch ..... 0.6667  
Number of poles ..... 4  
Number of bearings ..... 2  
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%  
Paralleling kit droop transformer ..... Standard  
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 EMCP II+ 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, 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

**TECHNICAL DATA**

<b>Generator Set — 1800 rpm/60 Hz/480 Volts</b>		<b>DM 5853</b>		<b>DM 5854</b>	
<b>G3520C Gas Generator Set</b>					
Emission level (NOx)	mg/Nm <sup>3</sup> g/bhp-hr	450	1.0	225	0.5
Aftercooler SCAC (Stage 2)	Deg C Deg F	70	158	70	158
<b>Package Performance (1)</b>					
Power Rating @ 0.8 pf (with 2 water pumps and without fan)	ekW Continuous	1900		1900	
Power Rating @ 0.8 pf (with 2 water pumps and without fan)	kVA Continuous	2375		2375	
Power Rating @ 1.0 pf (with 2 water pumps and without fan)	ekW Continuous	1940		1940	
Electric Efficiency @ 1.0 pf (ISO 3046/1) (2)	%	37.0		37.0	
Mechanical Power (with 2 water pumps and without fan)	bkW bhp	1992	2,671	1992	2,671
<b>Fuel Consumption (3)</b>					
100% load without fan	Nm <sup>3</sup> /hr scf/hr	530	19,765	543	20,261
75% load without fan	Nm <sup>3</sup> /hr scf/hr	407	15,185	418	15,564
50% load without fan	Nm <sup>3</sup> /hr scf/hr	290	10,822	297	11,092
<b>Altitude Capability (4)</b>					
At 25° C (77° F) ambient, above sea level	M ft	800	2,625	800	2,625
<b>Cooling System</b>					
Ambient air temperature	Deg C Deg F	25	77	25	77
Jacket water temperature (Maximum outlet)	Deg C Deg F	99	210	99	210
<b>Exhaust System</b>					
Combustion air inlet flow rate	Nm <sup>3</sup> /min SCFM	150	5,786	157	6,031
Exhaust stack gas temperature	Deg C Deg F	513	955	511	952
Exhaust gas flow rate	Nm <sup>3</sup> /min CFM	159	16,400	166	17,041
Exhaust flange size (internal diameter)	mm in	360	14	360	14
<b>Heat Rejection (5)</b>					
Heat rejection to jacket water and oil cooler and AC — Stage 1	kW Btu/min	1127	64,063	1162	66,034
Heat rejection to AC — Stage 2	kW Btu/min	111	6,326	122	6,947
Heat rejection to exhaust (LHV to 350° F)	kW Btu/min	1267	72,121	1312	74,664
Heat rejection to exhaust (LHV to 120° C)	kW Btu/min	1482	84,355	1535	87,372
Heat rejection to atmosphere from engine	kW Btu/min	172	9,775	172	9,775
Heat rejection to atmosphere from generator	kW Btu/min	62.8	3,575	62.8	3,575
<b>Generator</b>					
Frame			827		827
Temperature rise	Deg C Deg F	105	221	105	221
Motor starting capability @ 30% voltage dip (6)	skVA		5073		5073
<b>Lubrication System</b>					
Standard sump refill with filter change	L gal	541	143	541	143
<b>Emissions (7)</b>					
NOx @ 5% O <sub>2</sub> (dry)	mg/Nm <sup>3</sup> g/bhp-hr	450	1	225	0.5
CO @ 5% O <sub>2</sub> (dry)	mg/Nm <sup>3</sup> g/bhp-hr	1136	2.58	1037	2.39
THC @ 5% O <sub>2</sub> (dry)	mg/Nm <sup>3</sup> g/bhp-hr	1876	4.25	2192	5.04
NMHC @ 5% O <sub>2</sub> (dry)	mg/Nm <sup>3</sup> g/bhp-hr	282	0.64	329	0.76
Exhaust O <sub>2</sub> (dry)	%		9.6		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/cu ft) 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° C (77° 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° C (77° 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° C (32° F). Emission data shown is subject to instrumentation, measurement, facility, and engine fuel system adjustment.

## DIMENSIONS

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Package Dimensions		
<b>Length</b>	6367.1 mm	250.67 in
<b>Width</b>	1996.5 mm	78.60 in
<b>Height</b>	2340.4 mm	92.14 in
<b>Est. Shipping Weight</b>	18 350 kg	40,455 lb

Note: Do not use for installation design.  
See general dimension drawings  
for detail (Drawing # 234-1955).

[www.cat-electricpower.com](http://www.cat-electricpower.com)

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Performance Number: DM5853  
DM5854

Feature Code: 520GE11

Generator Arrangement: 144-1828

Source: U.S. Sourced

LEHE0004-00 (11-08)

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

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