



Image shown may not reflect actual package

NATURAL GAS CONTINUOUS (For CHP Applications) 2000 ekW 2500 kVA 50 Hz 1500 rpm

Caterpillar is leading the power generation marketplace with power solutions engineered to deliver unmatched flexibility, expandability, reliability and cost-effectiveness.

FEATURES

EMISSIONS

- Meets most worldwide emission levels down to 0.5 g/bhp-hr (250 mg/Nm³) No_x level without after treatment

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

- Cat[®] dealers provide extensive post sales support including maintenance and repair agreements
- Cat dealers have over 1,800 dealer branch stores operating in 200 countries
- The Caterpillar S•O•SSM program cost effectively detects internal engine component conditions, even the presence of unwanted fluids and combustion by-products

Cat[®] G3520C 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.
- 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 Cat 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 protection relaying
- UL508A Listed
- Remote control and monitor capability options

CONTINUOUS 2000 ekW 2500

50 Hz 1500 RPM



FACTORY INSTALLED STANDARD & OPTIONAL EQUIPMENT

System	Standard	Optional
Gas Engine Control Module (GECM)	Fuel/air ratio control; Start/stop logic: gas purge cycle, staged shutdown; Engine Protection System: detonation sensitive timing, high exhaust temperature shutdown; Governor: Transient richening and turbo bypass control; Ignition. Island Mode Feature -- additional engine control module , new software and engine sensors	
Air Inlet	Two element, single-stage air cleaner with enclosure and service indicator	Air cleaner with precleaner; Mounting stand
Control Panel		EMCP II+ Local alarm module; Remote annunciator; Communications Module (PL1000T, PL1000E) Synchronizing module; Engine failure relay
Cooling	ANSI/DN customer flange connections for JW inlet and outlet Cat flanges on SCAC circuit	Coolant level drain line with valves, fan with guard; Inlet/Outlet connections.
Exhaust	Dry exhaust manifolds, insulated and shielded; Center section cooled turbocharger with Cat flanged outlet; Individual exhaust port and turbocharger outlet wired to Integrated Temperature Sensing Module (ITSM) with GECM providing alarms and shutdowns.	Flange; Exhaust expander; Elbow; Flexible fitting; Muffler and spark-arresting muffler with companion flanges.
Fuel	Electronic fuel metering valve; Throttle plate, 24V DC actuator, controlled by GECM; Fuel system is sized for 31.5 to 47.2 MJ/Nm ³ (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.	Fuel filter; Gas pressure regulator; Gas shutoff valve, 24V, ETR (Energized-To-Run)
Generator	SR4B generator, includes: Cat Digital Voltage Regulator (Cat DVR) with 3-phase sensing and KVAR/PF control; Reactive droop; Bus bar connections; Winding temperature detectors; Anti-condensation space heater.	Medium and high voltage generators and attachments; Low voltage extension box; Cable access box; Air filter for generator; Bearing temperature detectors; Manual voltage control; European bus bar.
Governing	Electronic speed governor as part of GECM; Electronically-controlled 24V DC actuator connected to throttle shaft.	Woodward load sharing module
Ignition	Electronic Ignition System controlled by GECM; Individual cylinder Detonation Sensitive Timing (DST)	
Lubrication	Lubricating oil; Gear type lube oil pump; Oil filter, filler and dipstick; Integral lube oil cooler; Oil drain valve; Crankcase breather.	Oil level regulator; Prelube pump; Positive crankcase ventilation system
Mounting	330 mm structural steel base (for low and medium voltage units); Spring-type anti-vibration mounts (shipped loose)	
Starting / Charging	24V starting motors; Battery with cables and rack (shipped loose); Battery disconnect switch; 60A, 24V charging alternator (standard on 60Hz 1800rpm only)	Charging alternator; Battery charger; Oversized battery; Jacket water heater;
General	Paint -- Caterpillar Yellow except rails & radiators; Damper guard. Operation and Maintenance Manuals; Parts Book.	Crankcase explosion relief valve; Engine barring group; EEC D.O.I and other certifications

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SPECIFICATIONS

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 (5266)
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)

Consult your Cat dealer for all available voltages and performance

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, kWhr, %kW, pf
 - System diagnostic codes
- Shutdown with indicating lights;
 - Low oil pressure
 - High coolant temperature
 - High oil temperature
 - Overspeed
 - Overcrank
 - Emergency stop
 - Detonation sensitive timing
- Programmable protective relaying functions:
 - Under / Over voltage
 - Under / Over frequency
 - Overcurrent
 - Reverse power
- Spare indicator LEDs
- Spare alarm/shutdown inputs

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TECHNICAL DATA

G3520C Gas Generator Set		DM 5844	DM 5847	DM5849	DM5838	DM5840	DM5842
Emission level (NO _x)	mg/Nm ³	500	350	250	500	350	250
Aftercooler SCAC (Stage 2)	Deg C	32	32	32	54	54	54
Package Performance ⁽¹⁾							
Power Rating @ 0.8 pf (without water pumps and without fan)	ekW Continuous	2000	2000	2000	2000	2000	2000
Power Rating @ 0.8 pf (without water pumps and without fan)	kVA Continuous	2500	2500	2500	2500	2500	2500
Power Rating @ 1.0 pf (without water pumps and without fan)	ekW Continuous	2020	2020	2020	2020	2020	2020
Electric Efficiency @ 1.0 pf (ISO 3046/1) ⁽²⁾	%	40.5	39.8	39.4	40.5	39.9	39.6
Mechanical Power (without water pumps and without fan)	bkW	2070	2070	2070	2070	2070	2070
Fuel Consumption ⁽³⁾							
100% load w/o fan	Nm ³ /hr	505	513	518	504	512	516
75% load w/o fan	Nm ³ /hr	389	396	400	387	393	396
50% load w/o fan	Nm ³ /hr	271	276	279	269	273	276
Altitude Capability ⁽⁴⁾							
At 25° C (77° F) ambient, above sea level	m	390	298	238	250	250	250
Cooling System							
Ambient air temperature	Deg C	25	25	25	25	25	25
Jacket water temperature (Maximum outlet)	Deg C	90	90	90	90	90	90
Exhaust System							
Combustion air inlet flow rate	Nm ³ /min	145	149	151	147	150	152
Exhaust stack gas temperature	Deg C	449	449	457	453	456	458
Exhaust gas flow rate	Nm ³ /min	154	154	160	156	159	161
Exhaust flange size (internal diameter)	mm	328	328	328	328	328	328
Heat Rejection ⁽⁵⁾							
Heat rejection to JW, oil cooler and AC - Stage 1	kW	1040	1050	1055	1074	1094	1108
Heat rejection to AC - Stage 2	kW	197	200	202	126	131	134
Heat rejection to exhaust (LHV to 25° C)	kW	1679	1750	1797	1712	1762	1793
Heat rejection to exhaust (LHV to 120° C)	kW	1190	1239	1270	1219	1254	1274
Heat rejection to atmosphere from engine	kW	125	125	125	125	125	125
Heat rejection to atmosphere from generator (Typical)	kW	64	64	64	64	64	64
Lubrication System							
Standard sump refill with filter change	L	541	541	541	541	541	541
Emissions ⁽⁷⁾							
NO _x @ 5% O ₂ (dry)	mg/Nm ³	500	350	250	500	350	250
CO @ 5% O ₂ (dry)	mg/Nm ³	971	962	957	1043	998	968
THC @ 5% O ₂ (dry)	mg/Nm ³	2675	2899	3048	2643	2768	2851
NMHC @ 5% O ₂ (dry)	mg/Nm ³	402	435	458	397	416	428
Exhaust O ₂ (dry)	%	9.3	9.6	9.7	9.4	9.5	9.5

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50 Hz 1500 RPM



TECHNICAL DATA

G3520C Gas Generator Set		DM 5845	DM 5848	DM5850	DM5839	DM5841	DM5843
Emission level (NO _x)	mg/Nm ³	500	350	250	500	350	250
Aftercooler SCAC (Stage 2)	Deg C	32	32	32	54	54	54
Package Performance ⁽¹⁾							
Power Rating @ 0.8 pf (without water pumps and without fan)	ekW Continuous	2000	2000	2000	2000	2000	2000
Power Rating @ 0.8 pf (without water pumps and without fan)	kVA Continuous	2500	2500	2500	2500	2500	2500
Power Rating @ 1.0 pf (without water pumps and without fan)	ekW Continuous	2020	2020	2020	2020	2020	2020
Electric Efficiency @ 1.0 pf (ISO 3046/1) ⁽²⁾	%	40.6	39.9	39.5	40.5	39.9	39.6
Mechanical Power (without water pumps and without fan)	bkW	2070	2070	2070	2070	2070	2070
Fuel Consumption ⁽³⁾							
100% load w/o fan	Nm ³ /hr	504	512	518	504	512	516
75% load w/o fan	Nm ³ /hr	389	395	400	387	393	396
50% load w/o fan	Nm ³ /hr	271	275	278	269	273	276
Altitude Capability ⁽⁴⁾							
At 25° C (77° F) ambient, above sea level	m	390	298	238	350	350	350
Cooling System							
Ambient air temperature	Deg C	25	25	25	25	25	25
Jacket water temperature (Maximum outlet)	Deg C	99	99	99	99	99	99
Exhaust System							
Combustion air inlet flow rate	Nm ³ /min	146	149	152	147	149	156
Exhaust stack gas temperature	Deg C	450	456	459	446	468	469
Exhaust gas flow rate	Nm ³ /min	155	158	161	155	158	160
Exhaust flange size (internal diameter)	mm	328	328	328	328	328	328
Heat Rejection ⁽⁵⁾							
Heat rejection to JW, oil cooler and AC - Stage 1	kW	985	994	999	1011	1030	1042
Heat rejection to AC - Stage 2	kW	227	230	232	155	160	184
Heat rejection to exhaust (LHV to 25° C)	kW	1684	1756	1802	1733	1784	1815
Heat rejection to exhaust (LHV to 120° C)	kW	1198	1247	1279	1257	1293	1314
Heat rejection to atmosphere from engine	kW	138	138	138	138	138	138
Heat rejection to atmosphere from generator (Typical)	kW	64	64	64	64	64	64
Lubrication System							
Standard sump refill with filter change	L	541	541	541	541	541	541
Emissions ⁽⁷⁾							
NO _x @ 5% O ₂ (dry)	mg/Nm ³	500	350	250	500	350	250
CO @ 5% O ₂ (dry)	mg/Nm ³	981	973	968	1035	990	960
THC @ 5% O ₂ (dry)	mg/Nm ³	2633	2855	3002	2381	2493	2567
NMHC @ 5% O ₂ (dry)	mg/Nm ³	395	429	451	358	374	386
Exhaust O ₂ (dry)	%	9.4	9.7	9.8	9.2	9.3	9.4

RATING 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 35.6 MJ/Nm³ (905 Btu/ft³) and 80 Cat Methane Number.

For values in excess of altitude, ambient temperature, inlet/exhaust restriction, or different from the conditions listed, contact your local Cat dealer.

- (2) **Efficiency** of standard generator is used. For higher efficiency generators, contact your local Cat 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, NO_x. 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/Nm³ (905 Btu/cu ft) and 80 Cat 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.

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DIMENSIONS

Package Dimensions		
Length	6259.9 mm	246.42 in
Width	1827.5 mm	71.95 in
Height	2254.0 mm	88.74 in
Approx. Shipping Weight	18,350 kg	40,455 lb

Note: Weights and dimension are representative of a 400 Volt genset.
Do not use for installation design.
See general dimension drawings for details (Drawing: # 234-3560)

Performance Numbers: DM5838, DM5839
DM5840, DM5841
DM5842, DM5843
DM5844, DM5845
DM5847, DM5848
DM5849, DM5850

Feature Codes: 520GE24, 520GE25
520GE26, 520GE27
520GE47, 520GE48
520GE49, 520GE50

Source: US Sourced
LEHE2833-02 (05-11)

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