



Image shown may not reflect actual package

LOW ENERGY FUEL CONTINUOUS 1600 ekW / 2000 kVA 60 HZ 1200 RPM 480 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 .5 g/bhp-hr NO_x level without aftertreatment

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 range of applications worldwide
- Certified torsional vibration analysis available

WORLDWIDE PRODUCT SUPPORT

- Cat[®] dealers provide extensive post sales support including maintenance and repair agreement
- Cat dealers have over 1,600 dealer branch stores operating in 200 countries
- Cat[®] S•O•SSM 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 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 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 protective relaying
- UL 508A Listed
- Remote control and monitor capability options

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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.	
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	Engine driven water pumps for jacket water and aftercooler; Jacket water and SCAC thermostats; 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 10.8 to 25.6 MJ/Nm ³ (275 to 650 Btu/cu ft) dry pipeline natural gas with pressure of 10.0 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

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 (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)

CAT SR4B GENERATOR

Frame size	868
Excitation	Permanent Magnet
Pitch	0.75
Number of poles	6
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	Cat DVR
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 Cat 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
- 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, 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

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TECHNICAL DATA

G3520C Gas Generator Set (1)				DM 5859		DM 5860	
Emission level (NO _x)	mg/Nm ³	g/bhp-hr	440	1.0	220	0.5	
Aftercooler SCAC (Stage 2)	Deg C	Deg F	54	130	54	130	
Package Performance							
Power Rating @ 0.8 pf (w/ 2 water pumps and w/o fan)	ekW	Continuous	1600		1600		
Power Rating @ 0.8 pf (w/ 2 water pumps and w/o fan)	kVA	Continuous	2000		2000		
Power Rating @ 1.0 pf (w/ 2 water pumps and w/o fan)	ekW	Continuous	1613		1613		
Electric Efficiency @ 1.0 pf (ISO 3046/1) (2)		%	39.7%		38.9%		
Mechanical Power (w/ 2 water pumps and w/o fan)	bkW	bhp	1665	2233	1665	2233	
Fuel Consumption (3)							
100% load w/o fan	Nm ³ /hr	scf/hr	812	30 390	832	31 115	
75% load w/o fan	Nm ³ /hr	scf/hr	639	23 898	647	24 214	
50% load w/o fan	Nm ³ /hr	scf/hr	435	16 236	461	17 247	
Altitude Capability (4)							
At 25 Deg C (77 Deg F) ambient, above sea level	M	ft	880	2888	420	1378	
Cooling System							
Ambient air temperature	Deg C	Deg F	25	77	25	77	
Jacket water temperature (Maximum outlet)	Deg C	Deg F	110	230	110	230	
Exhaust System							
Combustion air inlet flow rate	Nm ³ /min	SCFM	112	4317	117	4512	
Exhaust stack gas temperature	Deg C	Deg F	488	910	481	898	
Exhaust gas flow rate	Nm ³ /min	CFM	121	12 063	127	12 476	
Exhaust flange size (internal diameter)	mm	in	360	14	360	14	
Heat Rejection (5)							
Heat rejection to jacket water & oil cooler & AC-Stage 1	kW	Btu/min	907	51 594	926	52 669	
Heat rejection to AC - Stage 2	kW	Btu/min	153	8675	156	8895	
Heat rejection to exhaust (LHV to 350 Deg F)	kW	Btu/min	994	56 564	1011	57 574	
Heat rejection to exhaust (LHV to 120 Deg C)	kW	Btu/min	1176	66 938	1201	68 360	
Heat rejection to atmosphere from engine	kW	Btu/min	127	7210	127	7210	
Heat rejection to atmosphere from generator	kW	Btu/min	66.7	3797	66.7	3797	
Generator							
Frame			868		868		
Temperature rise	Deg C	Deg F	105	221	105	221	
Motor starting capability @ 30% voltage dip (6)		skVA	4079		4079		
Lubrication System							
Standard sump refill with filter change	L	gal	541	143	541	143	
Emissions (7)							
NO _x @ 5% O ₂ (dry)	mg/Nm ³	g/bhp-hr	440	1.0	220	0.5	
CO @ 5% O ₂ (dry)	mg/Nm ³	g/bhp-hr	1100	2.5	1100	2.5	
THC @ 5% O ₂ (dry)	mg/Nm ³	g/bhp-hr	2522	5.56	2601	5.84	
NMHC @ 5% O ₂ (dry)	mg/Nm ³	g/bhp-hr	379	0.84	391	0.88	
Exhaust O ₂ (dry)		%	8.7		9		

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DEFINITIONS AND CONDITIONS

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

Data is based on low energy gas having a Low Heat Value (LHV) of 18 MJ/Nm³ (456 Btu/ft³) and 135 Cat Methane Number. For values in excess of altitude, ambient temperature, inlet/exhaust restriction, or different from the conditions listed, contact your 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 having a LHV of 456 Btu/cu and 135 Cat Methane number at 101.6 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.

CO value is nominal and representative of a new engine with < or equal to 100 hours.

For not-to-exceed or site specific emissions, contact your Cat Dealer.

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DIMENSIONS

Package Dimensions		
Length	6367.1 mm	250.67 in
Width	1996.5 mm	78.60 in
Height	2465.1 mm	97.05 in
Est. Shipping Weight	18 350 kg	40 455 lb

Note: Do not use for installation design.
See general dimension drawings
for detail. (Drawing # 267-7367)

Performance Number: DM5859, DM5860
Feature Code: 520GE38
Generator Argmt: 158-6422
Source: U.S. Sourced

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