

GAS GENERATOR SET



Image shown may not reflect actual package

Natural Gas Continuous 2055 kW 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_x level without after-treatment.

FULL RANGE OF ATTACHMENTS

- Wide range of bolt-on system expansion attachments, factory designed and tested

PROVEN SYSTEM

- Fully prototype 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 re-tailored to your specific equipment application.
- High skilled technicians are trained to service every aspect of your electric power generation system.
- The Cat® SOSsm Service monitors and tracks internal engine component condition providing the capability to maximize product performance and minimizing owning and operating costs.

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 pipeline natural gas
- 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 settings
- Fully-featured power metering and protective relaying
- UL 508A Listed
- Remote control and monitor capability options

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	Remote radiator for JW and SCAC circuits, level switch included but not wired, 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/NM3 (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: Caterpillar's Digital Voltage Regulator (CDVR) 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

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 -----	827
Excitation -----	Permanent Magnet
Pitch -----	0.667
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 2.0%
Paralleling kit droop transformer -----	Standard
Voltage regulator -----	CDVR
Voltage regulation -----	+/- 0.5%
Telephone Influence Factor (TIF) -----	less than 50
Total Harmonic Distortion (THD) -----	less than 3.0%

Consult your Caterpillar dealer for available voltage

CAT EMCPII+ CONTROL PANAL

- * 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.

Continuous 2055 ekW 60 Hz 1800 RPM 480V



TECHNICAL DATA

G3520C Gas Generator Set			DM 3194		DM 3195	
Emission level (NOx)	mg/N.M3	g/bhp-hr	446	1.0	221	0.5
Aftercooler SCAC (Stage 2)	Deg C	Deg F	54	130	54	130
Package Performance (1)						
Power Rating @ 0.8 pf (w/ 2 water pumps and w/o fan)	ekW	Continuous	2055		2055	
Power Rating @ 0.8 pf (w/ 2 water pumps and w/o fan)	kVA	Continuous	2569		2569	
Power Rating @ 1.0 pf (w/ 2 water pumps and w/o fan)	ekW	Continuous	2100		2100	
Electric Efficiency @ 1.0 pf (ISO 3046/1) (2)		%	38.4		37.4	
Mechanical Power (w/ 2 water pumps and w/o fan)	bkW	bhp	2154	2889	2154	2889
Fuel Consumption (3)						
100% load w/o fan	NM3/hr	scf/hr	553	20 619	567	21 146
75% load w/o fan	NM3/hr	scf/hr	432	16 079	443	16 495
50% load w/o fan	NM3/hr	scf/hr	303	11 276	310	11 571
Altitude Capability (4)						
At 25 Deg C (77 Deg F) ambient, above sea level	M	ft	976	3200	976	3200
Cooling System						
Ambient air temperature	Deg C	Deg F	25	77	25	77
Jacket water temperature (Maximum outlet)	Deg C	Deg F	90	194	90	194
Exhaust System						
Combustion air inlet flow rate	NM3/min	SCFM	158	6097	167	6410
Exhaust stack gas temperature	Deg C	Deg F	487	909	478	893
Exhaust gas flow rate	NM3/min	CFM	168	16 714	176	17 348
Exhaust flange size (internal diameter)	mm	in	360	14	360	14
Heat Rejection (5)						
Heat rejection to jacket water and oil cooler and AC - Stage 1	kW	Btu/min	1187	67 467	1239	70 479
Heat rejection to AC - Stage 2	kW	Btu/min	144	8167	161	9150
Heat rejection to exhaust (LHV to 350 Deg F)	kW	Btu/min	1230	69 984	1250	71 169
Heat rejection to exhaust (LHV to 120 Deg C)	kW	Btu/min	1455	82 818	1487	84 640
Heat rejection to atmosphere from engine	kW	Btu/min	154	8763	154	8763
Heat rejection to atmosphere from generator	kW	Btu/min	69	3924	69	3924
Generator						
Frame			827			
Temperature rise	Deg C	Deg F	105	221	105	221
Motor starting capability @ 30% voltage dip (6)		skVA	5226		5226	
Lubrication System						
Standard sump refill with filter change	L	gal	541	143	541	143
Emissions (7)						
NOx @ 5% O2 (dry)	mg/N.M3	g/bhp-hr	446	1	221	0.5
CO @ 5% O2 (dry)	mg/N.M3	g/bhp-hr	1051	2.36	946	2.14
THC @ 5% O2 (dry)	mg/N.M3	g/bhp-hr	1789	4.01	2137	4.83
NMHC @ 5% O2 (dry)	mg/N.M3	g/bhp-hr	269	0.61	321	0.73
Exhaust O2 (dry)		%	1.77		9.9	

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 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, NO_x. 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 fuel system adjustment.

DIMENSIONS

Package Dimensions		
Length	6367.1 mm	250.67 in
Width	1996.5	78.6
Height	2340.4 mm	92.14 in
Shipping Weight	18 350 kg	40 437 lb

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

Performance Number: DM3194, DM3195
Feature Code: 520GE10
Generator Arrangement: 144-1828

Information contained in this publication may be considered confidential. Discretion is recommended when distributing. Materials and specifications are subject to change without notice. CAT, CATERPILLAR, their respective logos, "Caterpillar Yellow" and the POWER EDGE trade dress, as well as corporate and product identity used herein, are trademarks of Caterpillar and may not be used without permission.