

0.5 g/bhp-hr NOx or 1.0 g/bhp-hr NOx (NTE)

CAT® ENGINE SPECIFICATIONS

V-20, 4-Stroke-Cycle

Bore	170 mm (6.7 in.)
Stroke	190 mm (7.5 in.)
Displacement	86.65 L (5288 cu. in.)
Aspiration	Turbocharged-2 Stage Aftercooled
Digital Engine Management	
Governor and Protection	Electronic (ADEM™ A3)
Combustion	Low Emissions (Lean Burn)
Engine Weight	
net dry (approx)	11,168.4 kg (24,622 lb)
Power Density	10.1 kg/kW (16.6 lb/hp)
Power per Displacement	17.1 bhp/L
Total Cooling System Capacity	285.8 L (75.5 gal)
Jacket Water	268.8 L (71 gal)
Aftercooler Circuit	17 L (4.5 gal)
Lube Oil System (refill)	2063 L (545 gal)
Oil Change Interval	1000 hours
Rotation (from flywheel end)	Counterclockwise
Flywheel and Flywheel Housing	SAE No. 00
Flywheel Teeth	183

FEATURES

Engine Design

- Built on G3500 LE proven reliability and durability
- Ability to burn a wide spectrum of gaseous fuels
- Robust diesel strength design prolongs life and lowers owning and operating costs
- Broad operating speed range at lower site air densities (high altitude/hot ambient temperatures)
- Higher power density improves fleet management
- Quality engine diagnostics
- Detonation-sensitive timing control for individual cylinders

Ultra Lean Burn Technology (ULB)

ULB technology uses an advanced control system, a better turbo match, improved air and fuel mixing, and a more sophisticated combustion recipe to provide:

- Lowest engine-out emissions
- Highest fuel efficiency
- Improved altitude and speed turndown
- Stable load acceptance and load rejection

Emissions

- Meets U.S. EPA Spark Ignited Stationary NSPS emissions for 2010 and some non-attainment areas
- Lean air/fuel mixture provides best available emissions and fuel efficiency for engines of this bore size

Advanced Digital Engine Management

ADEM A3 engine management system integrates speed control, air/fuel ratio control, and ignition/detonation controls into a complete engine management system. ADEM A3 has improved: user interface, display system, shutdown controls, and system diagnostics.

Full Range of Attachments

Large variety of factory-installed engine attachments reduces packaging time.

Testing

Every engine is full-load tested to ensure proper engine performance.

Gas Engine Rating Pro

GERP is a PC-based program designed to provide site performance capabilities for Cat® natural gas engines for the gas compression industry. GERP provides engine data for your site's altitude, ambient temperature, fuel, engine coolant heat rejection, performance data, installation drawings, spec sheets, and pump curves.

Product Support Offered Through Global Cat Dealer Network

More than 2,200 dealer outlets

Cat factory-trained dealer technicians service every aspect of your petroleum engine

Cat parts and labor warranty

Preventive maintenance agreements available for repair-before-failure options

S•O•SSM program matches your oil and coolant samples against Caterpillar set standards to determine:

- Internal engine component condition
- Presence of unwanted fluids
- Presence of combustion by-products
- Site-specific oil change interval

Over 80 Years of Engine Manufacturing Experience

Over 60 years of natural gas engine production

Ownership of these manufacturing processes enables Caterpillar to produce high quality, dependable products

- Cast engine blocks, heads, cylinder liners, and flywheel housings
- Machine critical components
- Assemble complete engine

Web Site

For all your petroleum power requirements, visit www.catoilandgas.cat.com.

STANDARD EQUIPMENT

Air Inlet System

Axial Flow Air cleaner
Cleanable
Intermediate-duty with service indicator

Control System

ADEM A3 with integrated electronic throttle control
CSA certified

Cooling System

Two-stage charge air cooling
 First Stage — JW + OC + 1st Stage AC
 Second Stage — 2nd Stage AC
Thermostats and housing
Engine-driven jacket and aftercooler water pump
Stainless steel aftercooler cores

Exhaust System

Dry exhaust manifolds
Dry exhaust elbow

Flywheels and Flywheel Housings

SAE No. 00 flywheel
SAE No. 00 flywheel housing
SAE standard rotation

Fuel System

7-50 psi gas supply
Fuel system is sized for 800 to 1200 btu/scf
(31.5 to 47.2 MJ/Nm³)

Ignition System

ADEM A3
Outdoor CSA certified

Lubrication System

Crankcase breather — top mounted
Oil cooler
Oil filter — RH
Oil pan — 144 gal
Oil sampling valve
Turbo oil accumulator

Power Take-Offs

Front housing — two-sided
Front lower LH, RH, and upper RH accessory drives

Torsional Vibration Analysis

Provided through Caterpillar, required through Q1 2010

General

Paint — Cat yellow
Crankshaft vibration damper and guard

OPTIONAL EQUIPMENT

Air Inlet System

Round air inlet adaptors

Charging System

Battery chargers
CSA certified version available with
 Charging system
 CSA alternator (24V, 65A)

Cooling System

Mechanical joint assembly connections

Exhaust System

Flexible fittings
Elbows
Flanges

Fuel System

Gas filter

Instrumentation

Advisor display panel
Communications module

Lubrication System

Lubricating oil
Oil bypass filter
Air prelube pump

Power Take-Offs

Front stub shaft
Pulleys
Double damper

Starting System

Air starting motor with controls (90 psi or 150 psi)
Jacket water coolant heater
Jacket water heater
ASME/ANSI B16.3 compliant piping components

General

Special paint

EU Certification

EEC DOI certification

Support

Factory commissioning

TECHNICAL DATA
G3520B Gas Petroleum Engine — 1200 rpm

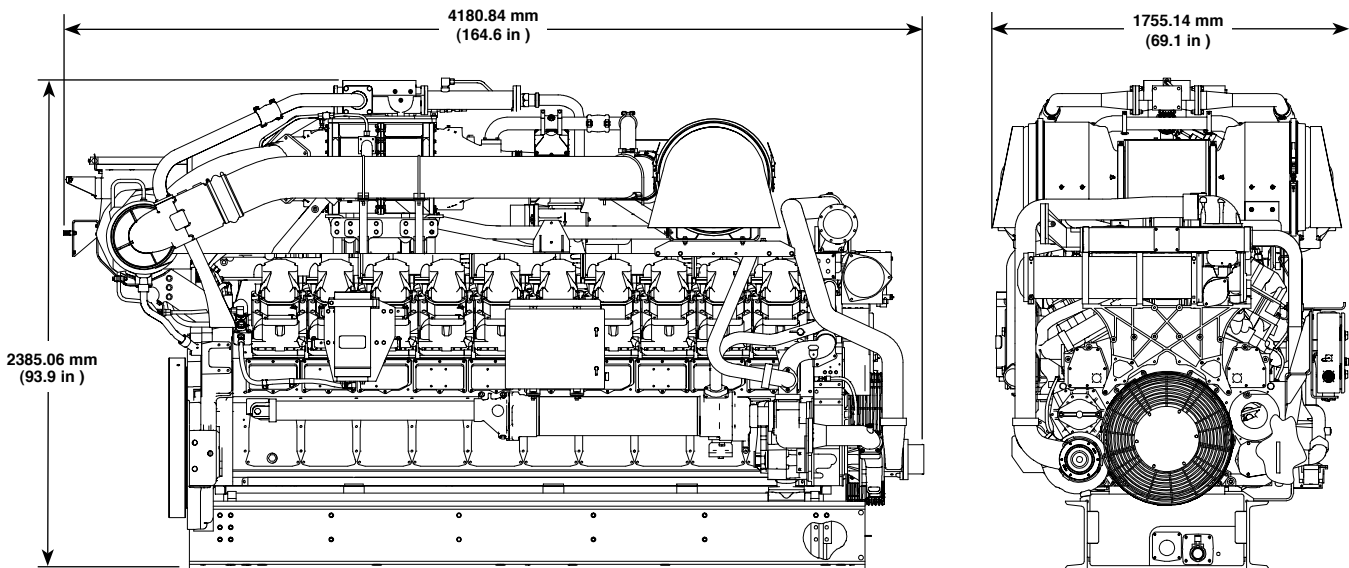
Fuel System		0.5 g NOx NTE Rating DM8821-01	1.0 g NOx NTE Rating DM8820-01
Engine Power @ 100% Load	bkW (bhp)	1104 (1480)	1104 (1480)
Engine Speed	rpm	1200	1200
Max Altitude @ Rated Torque and 38°C (100°F)	m (ft)	1828.8 (6000)	1828.8 (6000)
Speed Turndown @ Max Altitude, Rated Torque, and 38°C (100°F)	%	12.5	12.5
Aftercooler Temperature			
Stage 1 (JW)	°C (°F)	93.9 (201)	93.9 (201)
Stage 2 (SCAC)	°C (°F)	54.4 (130)	54.4 (130)
Compression Ratio		8.0:1	8.0:1
Emissions*			
NOx	g/bkW-hr (g/bhp-hr)	0.67 (0.50)	1.34 (1.00)
CO	g/bkW-hr (g/bhp-hr)	2.69 (2.01)	2.82 (2.11)
CO ₂	g/bkW-hr (g/bhp-hr)	638 (476)	626 (467)
VOC**	g/bkW-hr (g/bhp-hr)	0.56 (0.42)	0.4 (0.3)
Fuel Consumption*** @ 100% Load	MJ/bkW-hr (Btu/bhp-hr)	10.55 (7456)	10.13 (7161)
Heat Balance			
Heat Rejection to Jacket Water @ 100% Load			
JW	bkW (Btu/min)	552.2 (31,406)	536.0 (30,484)
OC	bkW (Btu/min)	83.8 (4768)	83.84 (4768)
Heat Rejection to Aftercooler @ 100% Load			
1st Stage AC	bkW (Btu/min)	91.3 (5198)	109.64 (6235)
2nd Stage AC	bkW (Btu/min)	132.7 (7549)	86.5 (4914)
Heat Rejection to Exhaust @ 100% Load	bkW (Btu/min)	1204 (68,536)	1119.2 (63,649)
Heat Rejection to Atmosphere @ 100% Load	bkW (Btu/min)	110.4 (6285)	110.5 (6285)
Exhaust System			
Exhaust Gas Flow Rate @ 100% Load	m ³ /min (cfm)	287.6 (10,156)	270.45 (9551)
Exhaust Stack Temperature @ 100% Load	°C (°F)	529.4 (985)	528.9 (984)
Intake System			
Air Inlet Flow Rate @ 100% Load	m ³ /min (scfm)	99.14 (3501)	93.13 (3289)
Gas Pressure	kPag (psig)	48-345 (7-50)	48-345 (7-50)

*at 100% load and speed, all values are listed as not to exceed

**Volatile organic compounds as defined in U.S. EPA 40 CFR 60, subpart JJJJ

***ISO 3046/1

G3520B — RIGHT SIDE VIEW & FRONT VIEW



DIMENSIONS		
Length	mm (in)	4180.84 (164.6)
Width	mm (in)	1755.14 (69.1)
Height	mm (in)	2385.06 (93.9)
Shipping Weight	kg (lb)	11,168.4 (24,622)

Note: General configuration not to be used for installation. See general dimension drawing.

RATING DEFINITIONS AND CONDITIONS

Engine performance is obtained in accordance with SAE J1995, ISO3046/1, BS5514/1, and DIN6271/1 standards.

Transient response data is acquired from an engine/generator combination at normal operating temperature and in accordance with ISO3046/1 standard ambient conditions. Also in accordance with SAE J1995, BS5514/1, and DIN6271/1 standard reference conditions.

Conditions: Power for gas engines is based on fuel having an LHV of 33.74 kJ/L (905 Btu/cu ft) at 101 kPa (29.91 in. Hg) and 15° C (59° F). Fuel rate is based on a cubic meter at 100 kPa (29.61 in. Hg) and 15.6° C (60.1° F). Air flow is based on a cubic foot at 100 kPa (29.61 in. Hg) and 25° C (77° F). Exhaust flow is based on a cubic foot at 100 kPa (29.61 in. Hg) and stack temperature.

Materials and specifications are subject to change without notice. The International System of Units (SI) is used in this publication. CAT, CATERPILLAR, their respective logos, ADEM, S-O-S, "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.