G3306B Oilfield Gas Generator Set

135 ekW (170 kVA)
60 Hz (1800 rpm)

CAT® GENERATOR SET SPECIFICATIONS

In-Line 6, 4-Stroke-Cycle-Spark Ignited Gas Engine

Emissions	0.5 g NSPS and Non-regulated
Bore	121 mm (4.76 in)
Stroke	152 mm (5.98 in)
Displacement	10.5 L (640 in^2)
Compression Ratio	8:1
Aspiration	Turbocharged-Aftercooled
Engine Ignition and Control	Electronic ADEM™ A4
Engine Protection	Electronic ADEM A4
Generator Set Control	EMCP 4.3 (4.4 optional)
Generator	SR4B
Voltage	480V
Full Rating Fuel Quality	Cat® MN 30
Minimum Fuel Quality	Cat MN 30

FEATURES

Product Design
- Fuel flexibility enables operation on a wide range of gas quality — from wellhead gas to pipeline quality natural gas
- Engine ratings developed to accept low-quality gas down to Cat MN 30 without derate
- Oversized SR4B generator optimized for block load acceptance and motor starting applications
- Package design and fuel flexibility allow minimum site preparation and low installation cost
- Heavy-duty base with tow bars and forklift pockets ideal for loading, transport, and unloading operations
- Open-skid configuration designed to integrate drop-over enclosure
- 4-point lifting structure

Superior Performance
- Superior gas engine transient capability
  - 70% G1 ISO 8528 load step
  - 50% G2 ISO 8528 load step
- Heavy-duty split core cooling system with low power draw and high ambient capability

Emissions Compliance
- For North America, configurations are available to meet NSPS standards in non-attainment areas
- Include factory-installed air-fuel ratio control and three-way catalyst
- Configurations with no air-fuel ratio control and no catalyst are also available

Durability
- Tough and durable, built on industry standard G3300 platform
- Rugged design optimized for harsh oilfield environments

Latest Electronics
- ADEM A4 control system provides integrated ignition, speed control, and protection
- Latest EMCP 4.3 controls for integrated engine-generator control, enhanced functionality, and simplified operator interface
- Optional EMCP 4.4 controls enable paralleling of up to eight units

Custom Packaging

For any petroleum application, trust Caterpillar to meet your project needs with custom factory generator sets and mechanical packages. Cat® engines, generators, controls, radiators, and transmissions can be custom-designed and matched in collaboration with our local dealers to create unique solutions. Custom packages are globally supported and are covered by a one-year warranty after startup.

Testing
- Every Cat generator set is full-load tested to ensure proper engine performance
- Generator sets are assembled, tested, and validated as a package to ensure performance, reliability, and durability

Product Support Offered Through Global Cat Dealer Network
- More than 2,200 dealer outlets
- Experienced Cat dealer technicians service every aspect of your Cat engine
- Worldwide parts availability, service, and warranty
- Preventive maintenance agreements available for repair-before-failure options
- S•O•S℠ 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

Web Site

For all your petroleum power requirements, visit www.catoilandgasinfo.com

CONFIGURATION

Air Inlet System
Air cleaner — intermediate duty, dry
Air cleaner rain cap
Air cleaner service Indicator

Cooling System
High ambient radiator design for gas fuel applications
Side-by-side aftercooler and jacket water core
Metal top and bottom tanks
Coolant drain
Fan and belt guard
Coolant level sensor

Exhaust System
Exhaust manifolds — water cooled
Exhaust elbow and flex fitting — 127 mm (5 in)
Residential grade muffler
+ Three-way catalyst
+ Critical grade muffler
+ Muffler mounting structure

Fuel System
Gas pressure regulator — requires 82.7-172.4 kPa (12-25 psi) gas
Natural gas carburetor
+ Air-fuel ratio control
+ Coalescing filter, heavy-duty for wellhead gas

Generator
Rated for continuous duty — 25% oversize
Class H insulation
Permanent magnet
Random wound
240 VAC space heater
Coastal insulation protection
IP23 protection
Cat Digital Voltage Regulator

Control System
Electronic governing ADEM A4
Electronic diagnostics and fault logging
Momentary start/stop logic
High temperature braided engine harness with 70-pin customer connector and service tool connector

Lube System
Crankcase breather, top-mounted
Oil filter, spin-on, left-hand service
Dipstick, left-hand service
Oil pump — gear-driven
Oil cooler

Mounting System
Heavy-duty welded steel base designed for the oilfield
Designed to accommodate a drop-over enclosure
Space claims for makeup tank and coalescing filter
Base design optimized for loading, transport, and unloading
- Fork lift pockets
- Tow bars — fore and aft
- Four-point lift from tow bars

Protection System
The following parameters include alarm and shutdown:
- Inlet manifold air temperature
- Inlet manifold air pressure
- Oil pressure
- Oil temperature
- Coolant temperature
- Engine overspeed
- Battery voltage

General
Jacket water heater
24V starting motor
24V, 45-amp charging alternator

Warranty
- Entire package covered under a one-year Caterpillar warranty
- Warranty includes all components and content

+ Optional attachment

TECHNICAL DATA AND SPECIFICATIONS

G3306B Oilfield Gas Generator Set

		DM9398-00 0.5 g NSPS 2010	DM9445-00 Non-regulated
Generator Set Data	**Units**		
Rated power (includes fan power)	ekW	135	135
kVA rating	kVA	170	170
Rated power factor		0.8	0.8
Frequency	Hz	60	60
Engine Data			
Engine power	bkW (bhp)	151 (202)	151 (202)
Engine speed	rpm	1800	1800
Min. Cat Methane Number without derate		30	30
BSFC @ 100% load	kJ/bkW-hr (btu/bhp-hr)	11,430 (8084)	11,460 (8105)
BSFC @ 75% load	kJ/bkW-hr (btu/bhp-hr)	11,960 (8459)	11,980 (8473)
BSFC @ 50% load	kJ/bkW-hr (btu/bhp-hr)	13,170 (9315)	13,170 (9315)
Air flow rate (@25°C, 101.3 kPa)	m^3/min (ft^3/min)	8.6 (302)	8.6 (302)
Inlet manifold pressure @ rated power	kPa (psi)	133 (19.3)	133 (19.3)
Aftercooler water temperature	°C (°F)	54 (130)	54 (130)
Jacket water temperature	°C (°F)	99 (210)	99 (210)
Exhaust stack temperature	°C (°F)	576 (1069)	580 (1076)
Exhaust flow rate (@stack temp, 101.3 kPa)	m^3/min (ft^3/min)	27.3 (964)	27 (968)
Lube oil system capacity	L (gal)	44.5 (12)	44.5 (12)
Engine coolant capacity	L (gal)	20 (5)	20 (5)
Radiator coolant capacity	L (gal)	196 (52)	196 (52)
Oil change interval	Hours	750	750
Emissions (NTE)			
NOx	g/bkW-hr (g/bhp-hr)	0.67 (0.50)	20.49 (15.28)
CO	g/bkW-hr (g/bhp-hr)	2.68 (2.00)	20.48 (15.27)
THC	g/bkW-hr (g/bhp-hr)	1.41 (1.05)	1.43 (1.07)
NMHC	g/bkW-hr (g/bhp-hr)	0.21 (0.16)	0.21 (0.16)
NMNEHC	g/bkW-hr (g/bhp-hr)	0.14 (0.10)	0.15 (0.11)
HCHO (formaldehyde)	g/bkW-hr (g/bhp-hr)	0.34 (0.25)	0.32 (0.24)
Generator Data			
Frame size		445	445
Voltage	Volts	480	480
Design kVA rating	kVA	213	213
Insulation class		UL 1446 Class H	UL 1446 Class H
Temperature rise (@ 40°C ambient temp)	°C	80	80
Overload		300%/10 sec	300%/10 sec
Coastal protection		Included	Included
Excitation		PM	PM
Number of poles		4	4
Winding		Form wound	Form wound
Pitch		0.75	0.75
Number of leads		6	6
Number of bearings		1	1
Ingress protection rating		IP 23	IP 23
Alignment		Close coupled	Close coupled
Space heater		Available	Available

ALTITUDE AND AMBIENT DERATION FACTORS

Fuel Usage Guide

Cat Methane Number	30	35	40	45	50	55	60	65	70	75	80
Set point timing	21	22	22	23	25	26	28	30	31	33	35
Deration factor	1	1	1	1	1	1	1	1	1	1	1

Altitude and Ambient Deration Factors

	10°C	15°C	20°C	25°C	30°C	35°C	40°C	45°C	50°C
0 m	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.99	0.98
250 m	1.00	1.00	1.00	1.00	1.99	0.99	0.98	0.97	0.96
500 m	0.98	0.98	0.98	0.98	0.97	0.97	0.96	0.95	0.94
750 m	0.96	0.96	0.96	0.96	0.96	0.95	0.94	0.93	0.92
1000 m	0.95	0.95	0.95	0.95	0.94	0.93	0.93	0.91	0.90
1250 m	0.93	0.93	0.93	0.93	0.92	0.91	0.91	0.90	0.88
1500 m	0.91	0.91	0.91	0.91	0.90	0.90	0.89	0.88	0.87
1750 m	0.89	0.89	0.89	0.89	0.88	0.88	0.87	0.86	0.85
2000 m	0.87	0.87	0.87	0.87	0.86	0.86	0.85	0.84	0.83
2250 m	0.85	0.85	0.85	0.85	0.84	0.84	0.83	0.82	0.81
2500 m	0.84	0.84	0.84	0.84	0.82	0.82	0.81	0.80	0.79
2750 m	0.82	0.82	0.82	0.82	0.81	0.80	0.79	0.78	0.77
3000 m	0.80	0.80	0.80	0.80	0.79	0.78	0.78	0.77	0.76

EMCP 4.3 FEATURES

140 mm (5.5 in) Graphical Display
- Generator AC voltage
- 3-phase (L-L & L-N)
- ± 0.25% accuracy
- rpm and battery voltage
- Generator AC current (per phase and average)
- Generator frequency
- Power metering (kW, kVA, kVAr, pf)
- Hour meters (kW-hour, kVAr-hour)
- Engine oil pressure (psi, kPa or bar)
- Engine oil temperature (°C or °F)
- Engine coolant temperature (°C or °F)
- Multiple language support
- Engine start and crank attempt counter
- Real-time clock

Communication
- Accessory CAN data link
- RS-485 annunciator data link
- RS-485 SCADA (Modbus RTU)
- Ethernet SCADA (Modbus TCP)

Controls
- Auto/start/stop
- Engine cooldown timer
- Emergency stop
- Engine cycle crank
- Programmable cycle timer
- Paralleling up to eight units*

Generator Set Protection
- Over/under voltage
- Over/under frequency
- Generator phase sequence
- Over current (timed and inverse)
- Reverse kW, kVA
- Current balance
- Low oil pressure
- High coolant temp
- Low coolant level
- Fail to start
- Overspeed

Outputs
- 16 (17*) programmable digital outputs
- 3 programmable (4-20 mA or ±10V)
- 2 programmable (PWM)

Inputs
- Emergency stop
- Remote start
- 12 programmable digital inputs
- Oil pressure and water temperature
- 3 (4*) programmable inputs (±10V, PWM, current, or resistive)
- Oil temperature, fuel level

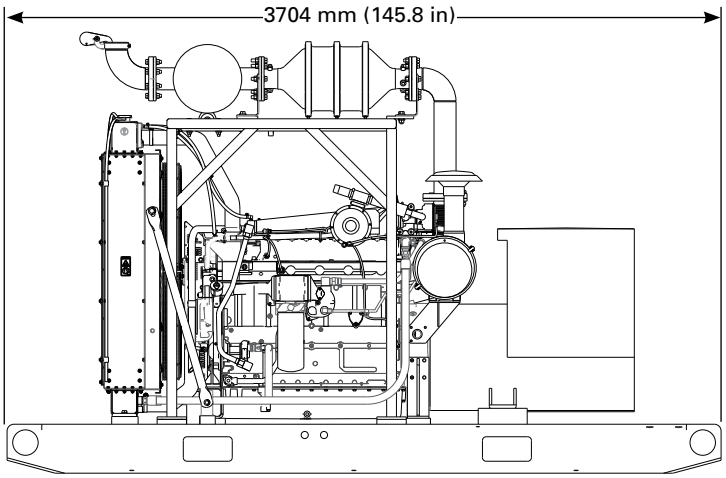
Other Features
- 16 languages supported:
  - Arabic
  - Chinese
  - Danish
  - Dutch
  - English
  - Finnish
  - French
  - German
  - Greek
  - Italian
  - Japanese
  - Portuguese
  - Russian
  - Spanish
  - Swedish
  - Turkish
- Programmable security levels
- Reduced power mode
- Programmable kW relay
- Cat switchgear integration
- Status event log

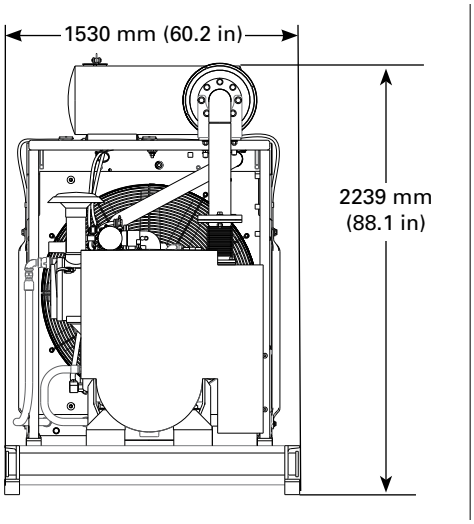
*Optional EMCP 4.4 feature

DIMENSIONS

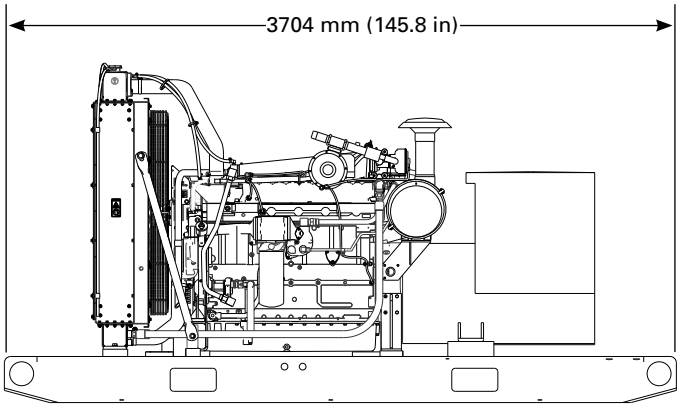
OILFIELD GAS GENERATOR SET

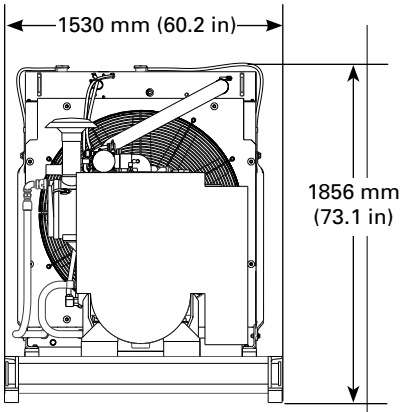
0.5 g NSPS Emissions Compliant Package





Non-regulated Package





GENERATOR SET DIMENSIONS AND WEIGHT			
		0.5 g NSPS Configuration	Non-regulated Configuration
Length	mm (in)	3704 (145.8)	3704 (145.8)
Width	mm (in)	1530 (60.2)	1530 (60.2)
Height	mm (in)	2239 (88.1)	1856 (73.1)
Weight, dry*	kg (lb)	3577 (7886)	3500 (7716)

*Module weight includes engine, generator, and base.

Note: Do not use for installation design. See installation drawing for details.

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.