Diesel Generator Set

Image shown may not reflect actual package

Standby
2500 ekW 3125 kVA
60 Hz 1800 rpm 480 Volts

Caterpillar is leading the power generation Market place with Power Solutions engineered to deliver unmatched flexibility, expandability, reliability, and cost-effectiveness.

FUEL/EMISSIONS STRATEGY
- EPA Tier 4 Interim

DESIGN CRITERIA
- The generator set accepts 100% rated load in one step per NFPA 110 and meets ISO 8528-5 transient response.

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

SINGLE-SOURCE SUPPLIER
- Fully prototype tested with certified torsional vibration analysis available

WORLDWIDE PRODUCT SUPPORT
- Cat dealers provide extensive post sale support including maintenance and repair agreements
- Cat dealers have over 1,800 dealer branch stores operating in 200 countries.
- The Cat® SOS℠ program effectively detects internal engine component condition, even the presence of unwanted fluids and combustion by products.

CAT 3516C-HD ATAAC DIESEL ENGINE
- Reliable, rugged, durable design
- Field proven in thousands of applications worldwide
- Four-stroke diesel engine combines consistent performance and excellent fuel economy with minimum weight
- Engine performance optimized for use with Cat clean emissions module (CEM)

CAT CLEAN EMISSIONS MODULE (CEM)
- Diesel oxidation catalyst for particulate matter (PM) and hydrocarbon (HC) control
- Selective catalytic reduction (SCR) with integrated sound attenuation
- Integrated electronics for monitoring, protection, and closed loop NO_x control.
- Reliable, compact, and lightweight system gives maximum installation flexibility

CAT GENERATOR
- Matched to the performance and output characteristics of Caterpillar engines
- Single point access to accessory connections
- UL 1446 Recognized Class H insulation

CAT EMCP 4 CONTROL PANELS
- Simple user friendly interface and navigation
- Scalable system to meet a wide range of customer needs
- Integrated Control System and Communications Gateway

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Factory Installed Standard & Optional Equipment

System	Standard	Optional
Air Inlet	• Single element canister type air cleaner with service indicator	[ ] Dual element air cleaners [ ] Air inlet adapters & shutoff
Cooling	• Radiator with guard • Fan and belt guards • Coolant drain line with valve • Coolant level sensors* • Cat Extended Life Coolant*	[ ] Jacket water heater [ ] Radiator duct flange [ ] Radiator options
Exhaust	• Exhaust manifold - dry - dual • 254 mm (10 in) ID round flanged engine outlets • Clean Emissions Module (CEM) • CEM control cabinet • Flanged outlet	[ ] Mufflers [ ] Stainless steel exhaust flex fittings [ ] Elbows, flanges, expanders, & Y adapters [ ] CEM installation package including support, exhaust connection kit, harness, and heated urea lines.
Fuel	• Secondary fuel filters • Fuel cooler* • Fuel priming pump • Flexible fuel lines-shipped loose	[ ] Duplex secondary fuel filter [ ] Primary fuel filter with fuel waters separator
Generator	• 3 Phase brushless, Salient pole • Class H insulation • Cat digital voltage regulator (CDVR) with VAR/PF control, 3-phase sensing • Winding temperature detectors • Anti-condensation space heaters	[ ] Oversize generators
Power Termination	• Bus bar (NEMA mechanical lug holes) • Top cable entry	[ ] Circuit breakers, UL listed, 3 pole shunt trip, 100% rated, choice of trip units, manual or electrically operated [ ] Bottom cable entry [ ] Right, left, and/or rear power termination
Governor	• ADEM™ A4	[ ] Load share module
Control Panel	• User interface panel (UIP) - rear mount • EMCP 4.2 Genset Controller • AC & DC customer wiring area (right side) • Emergency Stop Pushbutton	[ ] Local & remote annunciator modules [ ] Digital I/O Module [ ] Generator temperature monitoring & protection
Lube	• Lubricating oil • Gear type lube oil pump • Integral lube oil cooler • Oil filter, filler and dipstick • Oil drain line and valve • Closed crankcase ventilation (CCV) system	[ ] Oil level regulator [ ] Deep sump oil pan [ ] Electric & air prelube pumps [ ] Manual prelube with sump pump [ ] Duplex oil filter
Mounting	• Rails - engine / generator / radiator mounting • Rubber anti-vibration mounts (shipped loose)	[ ] Spring type vibration isolator
Starting / Charging	• 24 volt starting motor(s) • Batteries with rack and cables • Battery disconnect switch • 60A charging alternator	[ ] Battery chargers (10, 20, & 50 Amp) [ ] Oversize batteries [ ] Ether starting aids [ ] Heavy duty starting motors [ ] Barring device (manual) [ ] Air starting motor with control & silencer
General	• Right hand service • Paint – Cat Yellow except rails and radiators gloss black • SAE standard rotation • Flywheel and flywheel housing – SAE No. 00	

*Not included with packages without radiators

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SPECIFICATIONS

CAT GENERATOR

Frame …….……..…….. 1842
Excitation ……..…Permanent Magnet
Pitch…….……0.6667
Number of poles……..……4
Number of leads……..……6
Number of bearings ……Two Bearing
Insulation ……Class H
IP rating ……..Drip proof IP23
Over speed capability - % of rated……125%
Wave form deviation……...2 %
Voltage regulator…… 3 phase sensing with load adjustable module
Voltage regulation….Less than ±1/2% (steady state)
Less than ±1/2% (3% speed change)
Telephone Influence Factor ……Less than 50
Harmonic Distortion ……..Less than 5%

CAT DIESEL ENGINE

3516C-HD ATAAC, V-16, 4 stroke, water-cooled diesel

Bore ……170.00 mm (6.69 in)
Stroke ……..215.00 mm (8.64in)
Displacement ……78.08 L (4764.73 in^3)
Compression ratio……14.0:1
Aspiration……TA
Fuel system……Electronic unit injection
Governor Type…….. ADEM™ A4

CAT EMCP 4 CONTROL PANELS

EMCP 4 controls including:
- Run / Auto / Stop Control
- Speed & Voltage Adjust
- Engine Cycle Crank
- Emergency stop pushbutton

EMCP 4.2 controller features:
- 24-volt DC operation
- Environmental sealed front face
- Text alarm/event descriptions

Digital indication for:
- RPM
- DC volts
- Operating hours
- Oil pressure (psi, kPa or bar)
- Coolant temperature
- Volts (L-L & L-N), frequency (Hz)
- Amps (per phase & average)
- Power Factor (per phase & average)
- kW (per phase, average & percent)
- kVA (per phase, average & percent)
- kVAr (per phase, average & percent)
- kW-hr & kVAr-hr (total)

Warning/shutdown with common LED indication of shutdowns for:
- Low oil pressure
- High coolant temperature
- Overspeed
- Emergency stop
- Failure to start (overcrank)
- Low coolant temperature
- Low coolant level

Programmable protective relaying functions:
- Generator phase sequence
- Over/Under voltage (27/59)
- Over/Under Frequency (81 o/u)
- Reverse Power (kW) (32)
- Reverse Reactive Power (kVAr) (32RV)
- Overcurrent (50/51)

Communications
- Customer data link (Modbus RTU)
- Accessory module data link
- Serial annunciator module data link

- 6 programmable digital inputs
- 4 programmable relay outputs (Form A)
- 2 programmable relay outputs (Form C)
- 2 programmable digital outputs

Compatible with the following optional modules:
- Digital I/O module
- Local Annunciator
- Remote annunciator
- RTD module
- Thermocouple module

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Technical Data

Open Generator Set - 1800 rpm/60 Hz/480 Volts	DM9301	
Tier 4 Interim		
Generator Set Package Performance		
Genset Power rating @ 0.8 pf	3125 kVA	
Genset Power Rating with fan	2500 ekW	
Fuel Consumption[1]		
100% Load with fan	654.5 L/hr	172.9 Gal/hr
75% Load with fan	495.9 L/hr	131.0 Gal/hr
50% Load with fan	355.6 L/hr	93.9 Gal/hr
Diesel Exhaust Fluid (DEF) Consumption[2]		
100% Load with fan	50.8 L/hr	13.4 Gal/hr
75% Load with fan	35.0 L/hr	9.2 Gal/hr
50% Load with fan	18.1 L/hr	4.8 Gal/hr
Cooling System[3]		
Engine coolant capacity with radiator	537 L	141.9 gal
Engine coolant capacity	233 L	61.6 gal
Radiator coolant capacity	304 L	80.3 gal
Inlet Air		
Combustion air inlet flow rate	197.8 mm^3/min	6985.4 cfm
Exhaust System[4]		
Exhaust stack gas temperature (engine out)	522.7 °C	972.9 °F
Exhaust gas flow rate	556.8 mm^3/min	19660 cfm
Exhaust system backpressure (maximum allowable)	6.7 kPA	26.9 in water
Heat Rejection		
Heat rejection to cooolant (total)	842 kW	47859 Btu/min
Heat rejection to exhaust (total)	2570 kW	146173 Btu/min
Heat rejection to aftercooler	665 kW	37831 Btu/min
Heat rejection to atmosphere from engine	168 kW	9535 Btu/min
Heat rejection to atmosphere from CEM	311 kW	17702 Btu/min
Heat rejection to atmosphere from generator	101.5 kW	5777 Btu/min
Alternator[5]		
Motor starting capabiliy @30% voltage dip	6559 skVA	
Frame	1842	
Temperature Rise	150 °C	270 °F
Lube System[6]		
Sump refil with filter	401.3 L	106 gal
Emissions (Nominal)[7]		
NOx g/hp-hr	0.59 g/hp-hr	
CO g/hp-hr	0.03 g/hp-hr	
HC g/hp-hr	0.00 g/hp-hr	
PM g/hp-hr	0.03 g/hp-hr	

[1] EPA Tier 4 Interim diesel engines required the use of Ultra Low Sulfur Diesel (ULSD) fuel in order to protect emissions control systems, help comply with emissions standards, and meet published maintenance intervals. ULSD fuel will have ≤ 15 ppm (0.0015%) sulfur using the ASTM D5453, ASTM 2622, or SIN 51400 test methods.

[2] Diesel Exhaust Fluid (DEF) is 32.5% urea in de-ionized water, defined by ISO-22241

[3] For ambient and altitude capabilities consult your Caterpillar dealer. Air flow restriction (system) is added to existing restriction from factory.

[4] Backpressure allowance is total backpressure available for the customer excluding the clean emissions module (CEM).

[5] Some packages may have oversized generators with a different temperature rise and motor starting characteristics. Generator temperature rise is based on a 40 degree C ambient per NEMA MG1-32.

[6] Requires the use of CJ4 oil in order to meet published maintenance intervals.

[7] Emissions data measurement procedures are consistent with those described in EPA CFR 40 Part 89, Subpart D & E and ISO8178-1 for measuring HC, CO, PM, NOx. Data shown is based on steady state operating conditions of 77°F, 28.42 in HG and number 2 diesel fuel with 35° API and LHV of 18,390 btu/lb. The nominal emissions data shown is subject to instrumentation, measurement, facility and engine to engine variations. Emissions data is based on 100% load and thus cannot be used to compare to EPA regulations which use values based on a weighted cycle. Emissions values are tailpipe out with aftertreatment installed. Values shown as zero may be greater than zero but were below the detection level of the equipment used at the time of measurement.

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RATING DEFINITIONS AND CONDITIONS

Meets or Exceeds International Specifications: · AS1359, CSA, IEC60034-1, ISO3046, ISO8528, NEMA MG 1-22, NEMA MG 1-33, UL508A, 72/23/EEC, 98/37/EC, 2004/108/EC

Standby - Output available with varying load for the duration of the interruption of the normal source power. Average power output is 85% of the standby power rating. Typical peak demand up to 100% of standby rated ekW for 5% of the operating time. Typical operation is 200 hours per year, with maximum expected usage of 500 hours per year. Fuel stop power in accordance with ISO3046. Standby ambients shown indicate ambient temperature at 100% load which results in a coolant top tank temperature just below the shutdown temperature.

Ratings are based on SAE J1349 standard conditions. These ratings also apply at ISO3046 standard conditions

Fuel Rates are based on fuel oil of 35º API [16º C (60º F)] gravity having an LHV of 42 780 kJ/kg (18,390 Btu/lb) when used at 29º C (85º F) and weighing 838.9 g/liter (7.001 lbs/U.S. gal.). Additional ratings may be available for specific customer requirements, contact your Cat representative for details. For information regarding Low Sulfur fuel and Biodiesel capability, please consult your Cat dealer.

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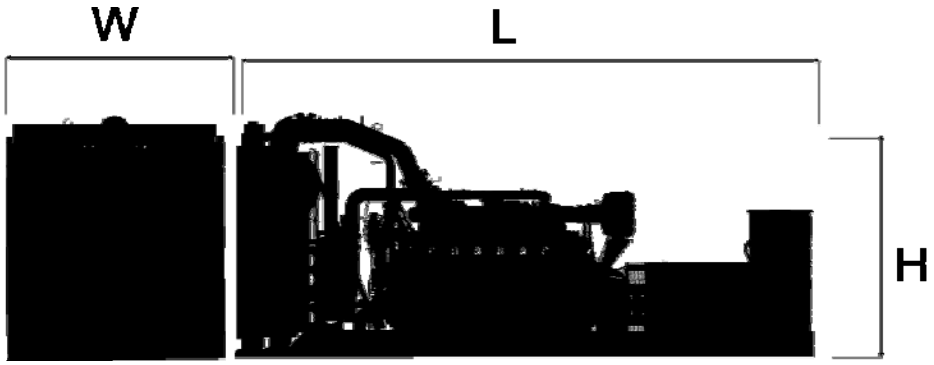
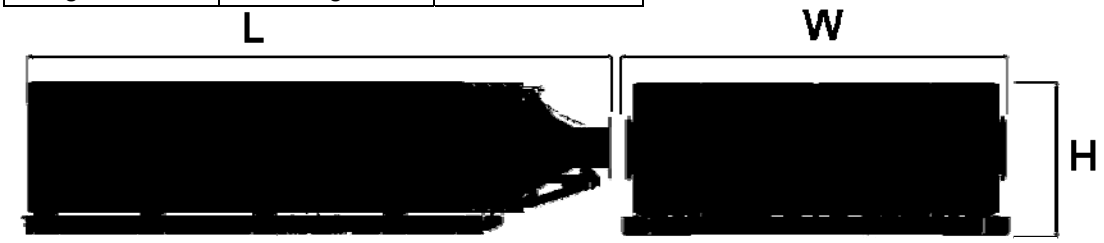
Dimensions

Package Dimensions		
Length	7100mm	279.5 in
Width	2588 mm	101.88 in
Height	2880 mm	113.38 in
Weight	19400 kg	42769 lb

NOTE: For reference only - do not use for installation design. Please contact your local dealer for exact weight and dimensions.



CEM Dimensions		
Length	3366 mm	132.5 in
Width	2230 mm	87.8 in
Height	894 mm	35.2 in
Weight	1814 kg	4000 lb



www.Cat-ElectricPower.com

Sourced: U.S. Sourced

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Materials and specifications are subject to change without notice. The International System of Units (SI) is used in this publication.