DIESEL GENERATOR SET

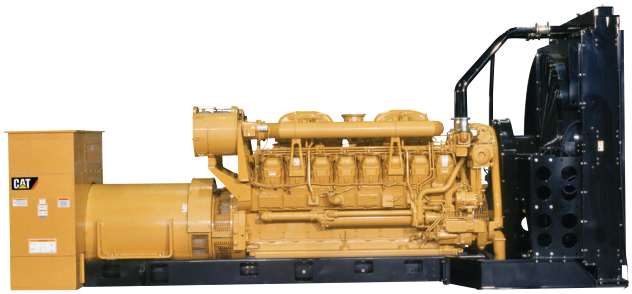

Image shown may not reflect actual package.

PRIME

1600 ekW 2000 kVA 60 Hz 1800 rpm 12 470 Volts

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

FEATURES

FUEL/EMISSIONS STRATEGY
- Low Fuel consumption

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® S•O•S℠ program cost effectively detects internal engine component condition, even the presence of unwanted fluids and combustion by-products

CAT® 3516 TA DIESEL ENGINE
- Reliable, rugged, durable design
- Field-proven in thousands of applications worldwide
- Four-stroke-cycle diesel engine combines consistent performance and excellent fuel economy with minimum weight

CAT HV GENERATOR
- Matched to the performance and output characteristics of Cat engines
- Single point access to accessory connections
- UL 1446 Recognized Class F 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 • Service indicator	[ ] Dual element & heavy duty air cleaners [ ] Air inlet adapters & shut-off
Cooling	• Radiator with guard • Coolant drain line with valve • Radiator fan and fan drive • Fan and belt guards • Cat® Extended Life Coolant* • Coolant level sensors	[ ] Duct flange [ ] Heat exchanger and expansion tank [ ] Coolant level switch gauge [ ] Jacket water heater
Exhaust	• Dry exhaust manifold • Flanged faced outlets	[ ] Mufflers and Silencers [ ] Stainless steel exhaust flex fittings [ ] Elbows, flanges, expanders & Y adapters
Fuel	• Secondary fuel filters • Fuel priming pump • Flexible fuel lines • Fuel cooler*	[ ] Water separator [ ] Duplex fuel filter [ ] Primary Fuel Filter
Power Termination	• Bus bar (NEMA mechanical lug holes) • Right hand cable entry • Top or bottom cable entry	[ ] Left hand cable entry
Generators	• Class F insulation • Cat digital voltage regulator (CDVR) with kVAR/PF control, 3-phase sensing • Winding temperature detectors • Anti-condensation heaters	[ ] Oversized generators [ ] Cross current compensation transformer
Governor	• Woodward 2301 isochronous	[ ] Load share governor
Control Panel	• EMCP 4.2 • User Interface panel (UIP) - rear mount • AC & DC customer wiring area (right side) • Emergency stop pushbutton	[ ] Option for right or left mount UIP [ ] Local & remote annunciator modules [ ] Digital I/O Module [ ] Generator temperature monitoring & protection [ ] Remote monitoring software
Lube	• Lubricating oil • Gear type lube oil pump • Oil filter, filler and dipstick • Oil drain lines and valve • Fumes disposal	[ ] 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)	[ ] Isolator removal [ ] Spring-type vibration isolator (shipped loose)
Starting/Charging	• 24 volt starting motor(s) • Batteries with rack and cables • Battery disconnect switch	[ ] Battery chargers (10 or 20 amp) [ ] 45 amp charging alternator [ ] Oversize batteries [ ] Ether starting aid [ ] Heavy duty starting motors [ ] Barring device (manual) [ ] Air starting motor with control & silencer
General	• Right hand service • Paint - Caterpillar Yellow (with high gloss black rails & radiator) • SAE standard rotation • Flywheel and flywheel housing - SAE No. 00	[ ] CSA certification [ ] CE Certificate of Conformance [ ] Seismic Certification per Applicable Building Codes: IBC 2000, IBC 2003, IBC 2006, IBC 2009, CBC 2007 * Not included with packages without radiators

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SPECIFICATIONS

CAT GENERATOR

Cat HV Generator
Frame size..... 2740
Excitation..... Permanent Magnet
Pitch..... 0.6670
Number of poles..... 4
Number of bearings..... 2
Number of Leads..... 006
Insulation..... Class H with tropicalization and antiabrasion
Insulation..... Class F with tropicalization and antiabrasion
- Consult your Caterpillar dealer for available voltages
IP Rating..... IP23
Alignment..... Closed Coupled
Overspeed capability..... 125
Wave form Deviation (Line to Line)..... 002.00
Voltage regulator..... 3 Phase sensing with volts/Hz
Voltage regulation..... Less than +/- 1/2% (steady state)
Less than +/- 1% (no load to full load)
Telephone influence factor..... Less than 50
Harmonic Distortion..... Less than 5%

CAT DIESEL ENGINE

3516 TA, V-16, 4-Stroke Water-cooled Diesel
Bore..... 170.00 mm (6.69 in)
Stroke..... 190.00 mm (7.48 in)
Displacement..... 69.00 L (4210.64 in^3)
Compression Ratio..... 13.0:1
Aspiration..... TA
Fuel System..... Mechanical unit injection
Governor Type..... Woodward

CAT EMCP 4 SERIES CONTROLS

EMCP 4 controls including:
- Run / Auto / Stop Control
- Speed and Voltage Adjust
- Engine Cycle Crank
- 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)
- ekW, kVA, kVAR, kW-hr, %kW, PF

Warning/shutdown with common LED indication of:
- 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:
- Six digital inputs (4.2 only)
- Four relay outputs (Form A)
- Two relay outputs (Form C)
- Two digital outputs
- Customer data link (Modbus RTU)
- Accessory module data link
- Serial annunciator module data link
- Emergency stop pushbutton

Compatible with the following:
- Digital I/O module
- Local Annunciator
- Remote CAN annunciator
- Remote serial annunciator

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TECHNICAL DATA

Open Generator Set - - 1800 rpm/60 Hz/12 470 Volts	DM7959	
Low Fuel Consumption		
Generator Set Package Performance		
Genset Power rating @ 0.8 pf	2000 kVA	
Genset Power rating with fan	1600 ekW	
Coolant to aftercooler		
Coolant to aftercooler temp max	82 ° C	180 ° F
Fuel Consumption		
100% load with fan	437.6 L/hr	115.6 Gal/hr
75% load with fan	337.7 L/hr	89.2 Gal/hr
50% load with fan	238.9 L/hr	63.1 Gal/hr
Cooling System[1]		
Air flow restriction (system)	0.12 kPa	0.48 in. water
Air flow (max @ rated speed for radiator arrangement)	1671 m^3/min	59011 cfm
Engine Coolant capacity with radiator/exp. tank	398.0 L	105.1 gal
Engine coolant capacity	233.0 L	61.6 gal
Radiator coolant capacity	165.0 L	43.6 gal
Inlet Air		
Combustion air inlet flow rate	150.1 m^3/min	5300.7 cfm
Exhaust System		
Exhaust stack gas temperature	505.4 ° C	941.7 ° F
Exhaust gas flow rate	408.3 m^3/min	14419.0 cfm
Exhaust flange size (internal diameter)	203.2 mm	8.0 in
Exhaust system backpressure (maximum allowable)	6.7 kPa	26.9 in. water
Heat Rejection		
Heat rejection to coolant (total)	954 kW	54254 Btu/min
Heat rejection to exhaust (total)	1850 kW	105209 Btu/min
Heat rejection to aftercooler	268 kW	15241 Btu/min
Heat rejection to atmosphere from engine	140 kW	7962 Btu/min
Heat rejection to atmosphere from generator	80.7 kW	4589.4 Btu/min
Alternator[2]		
Motor starting capability @ 30% voltage dip	3400 skVA	
Frame	2740	
Temperature Rise	105 ° C	189 ° F
Lube System		
Sump refill with filter	401.3 L	106.0 gal
Emissions (Nominal)[3]		
NOx g/hp-hr	10.24 g/hp-hr	
CO g/hp-hr	1.37 g/hp-hr	
HC g/hp-hr	.13 g/hp-hr	
PM g/hp-hr	.159 g/hp-hr	

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

[2] UL 2200 Listed 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.

[3] 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.

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

Prime - Output available with varying load for an unlimited time. Average power output is 70% of the prime power rating. Typical peak demand is 100% of prime rated ekW with 10% overload capability for emergency use for a maximum of 1 hour in 12. Overload operation cannot exceed 25 hours per year. Prime power in accordance with ISO3046. Prime ambients shown indicate ambient temperature at 100% load which results in a coolant top tank temperature just below the alarm 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 35° API [16° C (60° F)] gravity having an LHV of 42 780 kJ/kg (18,390 Btu/lb) when used at 29° C (85° 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	**6233.2 mm**	**245.4 in**
Width	**2286.0 mm**	**90 in**
Height	**2342.0 mm**	**92.2 in**
Weight	**9072 kg**	**20,000 lb**

NOTE: For reference only - do not use for installation design. Please contact your local dealer for exact weight and dimensions. (General Dimension Drawing #2748728).

Performance No.: DM7959

Feature Code: 516DE4D

Gen. Arr. Number: 2524224

Source: U.S. Sourced

July 26 2011

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