3516B Generator Set

Electric Power

The 3516B diesel generator sets are made to meet your mission critical, continuous, standby and prime applications. Producing reliable power from 1750 to 2500 kVA at 50 Hz, each generator set has been designed to meet ISO 8528-5 transient response requirements and to accept 100 percent rated load in one step. Our integrated control system keeps you connected through on-site and remote monitoring options. We offer easy-to-use EMCP control panel options, combining your management and diagnostic tools in one. The EMCP 4.4 controller provides multi-generator set paralleling capability, giving you the ability to add generator sets to match your growing power requirements. It's not just quality that matters but customization, choose from a broad range of accessories and bolt-on system expansion attachments. Find flexible packaging to fit unique spatial requirements and environmental conditions. Our 3516B generator sets are developed for such prerequisites, so that you can meet your specific power needs.

Specifications

Generator Set Specifications	
Minimum Rating	1750 kVA
Maximum Rating	2250 kVA
Emissions/Fuel Strategy	Low Fuel, Low Emissions
Voltage	380 to 11000 Volts
Frequency	50 Hz
Speed	1500 rpm
Duty Cycle	Standby, Mission Critical, Prime, Continuous

Engine Specifications		
Engine Model	3516B TA, V-16, 4-Stroke Water-Cooled Diesel	
Bore	170 mm	6.69 in
Stroke	190 mm	7.48 in
Displacement	4210.64 l	69 in
Compression Ratio	14.0:1	
Aspiration	TA	
Fuel System	Electronic unit injection	
Governor Type	Adem™3	

Generator Set Dimensions		
Length - Minimum	5928 mm	233.4 in
Length - Maximum	251.7 mm	6377 in
Width - Maximum	2286 mm	90 in
Height - Maximum	2367 mm	93.2 in
Dry Weight - Genset (minimum)	14470 kg	31900 lb

Dry Weight - Genset (maximum)	18290 kg	40320 lb

Benefits and Features

Cat Generator Set Package

- Cat generator set packages have been fully prototype tested
- Accepts 100% block load in one step and meets NFPA 110 loading requirements
- Conform to ISO 8528-5 steady state and transient response requirements

Cat 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

SR5 Alternator

- Superior motor starting capability minimizes need for oversizing alternator
- Designed to match performance and output characteristics of Cat diesel engines
- Robust Class H insulation

EMCP 4 Control Panel

- User-friendly interface and navigation
- Scalable system to meet a wide range of installation requirement
- Expansion modules and site-specific programming for specific customer requirements

Cooling System

- Designed to operate in standard ambient temperatures up to 50°C (122°F)
- Contact your Cat Dealer for specific ambient and altitude capabilities

Certifications

- IBC seismic certification
- EU Declaration of Conformity
- EU Declaration of Incorporation
- Eurasian Conformity (EAC)

One Safe Source

- Components used in the generator set are selected at the design stage to provide optimum package performance
- The generator set is fully assembled at a Caterpillar facility following our quality guidelines
- Each generator set package is tested before leaving the Caterpillar facility
- Cat product support, including dealer service, parts and warranty covers the entire Cat power system

World Wide Product Support

- Cat dealers have over 1,800 dealer branch stores operating in 200 countries
- Your local Cat dealer provides extensive post-sale support, including maintenance and repair agreements

Standard Equipment

Air Inlet System

- Air cleaner; single element canister type

Cooling

- Package mounted radiator

Exhaust

- Exhaust flange outlet

Fuel

- Primary fuel filter with integral water separator
- Secondary fuel filter

Generator

- Matched to the performance and output characteristics of Cat engines
- IP23 Protection

Power Termination

- Busbar

Control Panels

- Engine cool-down timer
- Frequency (Hz)
- DC Volts
- Volts (L-L & L-N)
- Customizable screens
- Limiter and exciter diode monitor
- Power Factor (per phase & average)
- 1 Programmable relay outputs (Form C
- Text alarm/event descriptions
- Speed adjust
- 1 Programmable digital outputs
- Overspeed - Emergency stop
- 4 Programmable relay outputs (Form A)
- Emergency stop - Failure to start (overcrank)
- Reverse reactive power (kVAr) (32RV)
- 6 Customer programmable digital inputs
- Customer data link (Modbus RTU)
- Emergency stop pushbutton
- Environmental sealed front face
- kW-hr (total) - kVAr-hr (total)
- Cat Connect
- Load histogram feature
- RPM - DC volts
- Failure to start (overcrank)
- Serial annunciator module data link
- Coolant temperature
- Operating hours
- kW (per phase, average & percent)

- IVR includes:
- Low coolant temperature
- Reactive droop capability
- Generator set packages include Caterpillar' s Voltage Regulator
- Digital indication for:
- KVAR/PF modes
- Lamp test
- Controls:
- PLC functionality
- 0 True RMS AC metering, 3-phase, +/-2% accuracy
- Oil pressure (psi, kPa or bar)
- Generator mounted - rear facing
- Amps (per phase & average)
- Low coolant level
- 3 Analog inputs
- Reverse power (kW) (32)
- 24 Volt DC operation
- Over / under voltage (2 7/ 59)
- Over / under frequency (81 o/u)
- RFI suppression
- 3 Phase voltage sensing
- EMCP 4.2B
- Alarm acknowledge
- Auto/start/stop control
- kVA (per phase, average & percent)
- Min / max exciter
- Engine cycle crank
- Low oil pressure
- Accessory module data link
- High coolant temperature
- Warning / shutdown with common LED indication of shutdowns for:
- Communications:
- Overcurrent (50 / 51)
- Number of I/O varies on options selected:
- Programmable protective relaying functions:

Control Panel

- EMCP 4 Genset Controller

Cooling System

- Certified standard PGS provided
- ATAAC - 3516E Package Radiators shipped installed

Exhaust System

- Dry exhaust manifold
- Flanged faced outlet(s)

Fuel System

- Secondary fuel filters
- Flexible fuel lines - shipped loose
- Fuel cooler; not included with packages without radiator
- Fuel priming pump

General

- Paint - Caterpillar Yellow except rails and radiators gloss black
- Right hand servicing
- Flywheel and flywheel housing - SAE No. 00
- SAE Standard rotation
- Caterpillar yellow with high gloss black rails and radiator

Generator and Attachments

- Busbar connections, right side extension box, bottom cable entry
- 3 Phase brushless, salient pole
- Form wound - Permanent magnet
- Anti condensation Space Heater
- Busbar connections, top center mounted, top cable entry
- 6 Leads
- Winding temperature detectors
- Class H temperature rise at 40C ambient (125C prime / 150C standby)
- Form wound
- Internal excitation
- NEMA Class H insulation
- Low Voltage:
- Random wound
- High voltage:
- Medium voltage:
- Class H insulation, Class F temperature rise at 40C ambient (105C prime / 130C standby)
- NEMA Class H insulation, Class H temperature rise at 40C ambient (125C prime / 150C standby
- Permanent magnet
- NEMA standard hole pattern

Governing System

- ADEM A3

Literature

- English

Lubrication System

- Fumes disposal
- Oil drain lines and valve
- Lubricating oil
- Integral lube oil cool
- Oil filter, filler and dipstick
- Gear type lube oil pump

Mounting System

- Rails - engine / generator / radiator mounting
- Anti-vibration mounts (shipped loose)
- Rubber anti-vibration mounts (shipped loose)

Starting System

- Battery and battery rack w/cables
- 24 Volt electric starting motor
- Battery disconnect switch
- 45 Amp charging alternator

Optional Equipment

Control System

- EMCP 4.3, EMCP 4.4

Exhaust

- Exhaust mufflers

Air Inlet System

- Single element filter
- Dual element air cleaner

Generator

- Oversize and premium generators
- Permanent magnet excitation (PMG)
- Anti-condensation heater
- Internal excitation (IE)

Cooling System

- Standard ambient radiators
- Coolant
- Optional installed radiators
- Optional installed ATAAC radiators
- Standard ambient ATAAC radiators

- Water level switch gauges

Power Termination

- Circuit breakers, IEC compliant
- Circuit breakers, UL listed

Crankcase System

- Ventilation system
- Explosion relief valves
- No explosion relief valves

Control Panels

- Remote monitoring software
- Load share module
- Digital I/ O module
- Generator temperature monitoring & protection

Exhaust System

- Y-Adapters
- Elbows
- Mufflers
- Flange and exhaust expanders
- Clean emission parts
- Tier 4 dosing cabinet
- Exhaust offset
- Flexible fittings
- Tier 4 clean emission MOD Kits
- Flanges
- Tier 4 clean emissions module

Fuel System

- Primary fuel filter
- Fuel Priming Pumps (Tier 4) - Manual or electric

Starting/Charging

- Air starting motor with control and silencer
- Charging alternator
- Oversize batteries
- Heavy-duty starting system

Generators and Attachments

- Differential current transformers (DCT)
- Thermostate for space heater
- Differntial current transformers (DCT) 8.7 kV and 15 kV classes
- Alternator air cleaner

- Generator conversion
- Space heater
- Low / Medium voltage: 380/400/415 volts, 3 phase 1500 rpm. RW, IE, No. of Leads = 6, Pitch = .6667: 1600 Frame
- Low / Medium voltage: 380/400/415 volts, 3 phase 1500 rpm. RW, PM, No. of Leads = 6, Pitch = .6667: 1600 and 1800 Frames

Instrumentation

- Pyrometer and thermocouples

General

- Special paint (Colors other than Caterpillar yellow or high performance paints)
- US aid emblem
- EEC Declaration of Conformity
- Automatic transfer switches (ATS)
- CSA Certification
- Seismic Certification per applicable building codes: IBC 2000, IBC 2003, IBC 2006, IBC 2009, CBC 2007
- Enclosures: sound attenuated, weather protective
- The following options are based on regional and product configuration:
- Integral & sub-base fuel tanks
- EU Certificate of Conformance (CE)
- Integral & sub-base UL listed dual wall fuel tanks
- UL 2200 package

Lubrication System

- Lube oil in standard sump
- Oil level regulator
- Prelube pumps

Mounting System

- IBC vibration isolators
- Spring type vibration isolators
- Puck style low efficiency isolators

Mounting

- IBC isolators

Power Connections

- Neutral ground connections
- Center post busbar
- Low voltage circuit breakers
- 2700 Frame, four lead, four terminal
- Right side power connections
- Ground cables between generator and terminal box
- Rear power connections

- Left side power connections

Special Tests / Reports

- Standard engine test charge
- Torsional vibration analysis reports
- PGS test report @ 1.0 power factor
- Fuel consumption test
- IBC certification
- Canadian Standards Association certification
- PGS test report @ 0.8 power factor
- generator test report
- Generator set fuel consumption test
- OSHPD certification

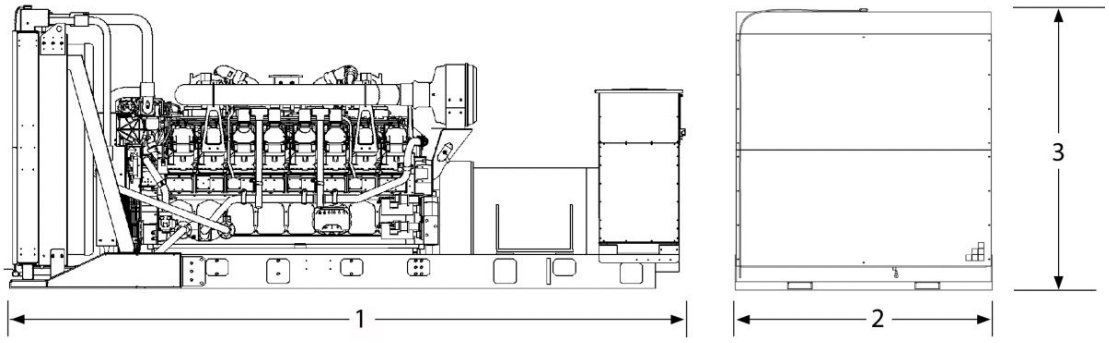
Starting and Charging

- Air starting motors
- Jacket water heaters
- Starter cover
- 10, 20, 35 and 50 amp battery chargers
- Air pressure regulator
- Electric starting motors
- Engine barring device
- 24 Volt battery set - Dry

Extended Service Coverage

- Platinum, Gold and Silver coverage

Dimensional Art



Dimensions	Dimension 1	Dimension 2	Dimension 3
Genset dimensions	6377 mm (251.7 in)	2286 mm (90.0 in)	2367 mm (93.2 in)

ELECTRIC POWER - Technical Spec Sheet
STANDARD

3516B

2000 ekW/ 2500 kVA/ 50 Hz/ 1500 rpm/ 400 V/ 0.8 Power Factor

Rating Type: MISSION CRITICAL STANDBY

Fuel Strategy: LOW EMISSIONS

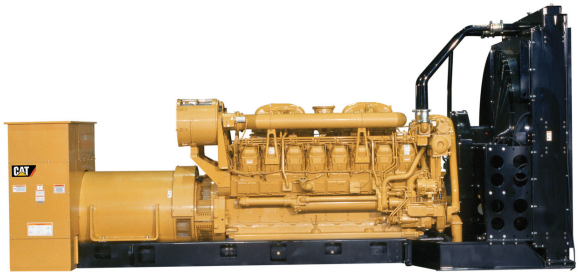


Image shown may not reflect actual configuration

3516B
2000 ekW/ 2500 kVA
50 Hz/ 1500 rpm/ 400 V

	Metric	English
Package Performance		
Genset Power Rating with Fan @ 0.8 Power Factor	2000 ekW	
Genset Power Rating	2500 kVA	
Aftercooler (Separate Circuit)	30.0 ° C	86.0 ° F
Fuel Consumption		
100% Load with Fan	535.5 L/hr	141.5 gal/hr
75% Load with Fan	404.4 L/hr	106.8 gal/hr
50% Load with Fan	269.8 L/hr	71.3 gal/hr
25% Load with Fan	148.1 L/hr	39.1 gal/hr
Cooling System[1]		
Engine Coolant Capacity	233.0 L	61.6 gal
Radiator Water Capacity High Temp Circuit	N/A	N/A
Radiator Water Capacity Low Temp Circuit	N/A	N/A
Radiator Total Capacity	N/A	N/A
Inlet Air		
Combustion Air Inlet Flow Rate	178.8 m³/min	6313.6 cfm
Max. Allowable Combustion Air Inlet Temp	58 ° C	136 ° F
Exhaust System		
Exhaust Stack Gas Temperature	511.1 ° C	952.0 ° F
Exhaust Gas Flow Rate	487.6 m³/min	17217.5 cfm
Exhaust System Backpressure (Maximum Allowable)	6.7 kPa	27.0 in. water

Rating Type: MISSION CRITICAL STANDBY

Fuel Strategy: LOW EMISSIONS

Heat Rejection		
Heat Rejection to Jacket Water	662 kW	37647 Btu/min
Heat Rejection to Exhaust (Total)	2228 kW	126704 Btu/min
Heat Rejection to Aftercooler	629 kW	35771 Btu/min
Heat Rejection to Atmosphere from Engine	153 kW	8701 Btu/min
Heat Rejection to Atmosphere from Generator	77 kW	4368 Btu/min

Alternator[2]	
Motor Starting Capability @ 30% Voltage Dip	8269 skVA
Current	3608 amps
Frame Size	1669
Excitation	PM
Temperature Rise	150 ° C

Emissions (Nominal)[3]		
NOx	1813.3 mg/Nm³	4.0 g/hp-hr
CO	462.8 mg/Nm³	1.0 g/hp-hr
HC	48.7 mg/Nm³	0.1 g/hp-hr
PM	42.3 mg/Nm³	0.1 g/hp-hr

DEFINITIONS AND CONDITIONS

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° 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.

Applicable Codes and Standards:
AS1359, CSA C22.2 No100-04, UL142,UL489, UL869, UL2200,
NFPA37, NFPA70, NFPA99, NFPA110, IBC, IEC60034-1, ISO3046, ISO8528,
NEMA MG1-22,NEMA MG1-33, 2006/95/EC, 2006/42/EC, 2004/108/EC.

Note: Codes may not be available in all model configurations. Please consult your local Cat Dealer representative for availability.

Rating Type: MISSION CRITICAL STANDBY

Fuel Strategy: LOW EMISSIONS

MISSION CRITICAL 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.

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 15° C (59° F) and weighing 850 g/liter (7.094 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.

Performance No.: EM2653-00

Feature Code: 516DRL8

Generator Arrangement: 2523886

Date: 03/17/2021

Source Country: U.S.