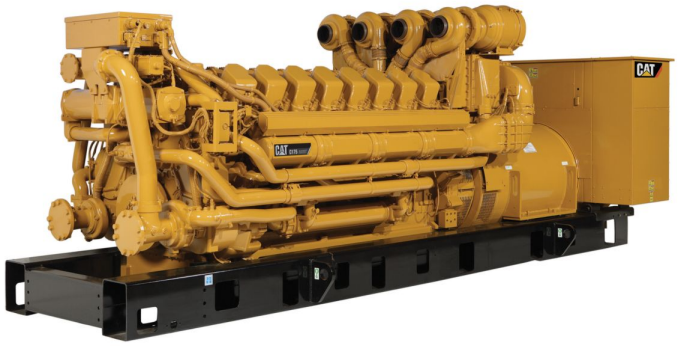
C175-16 Generator Set

Electric Power



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

Specifications

Generator Set Specifications	
Minimum Rating	2500 kVA
Maximum Rating	3100 kVA
Emissions/Fuel Strategy	Low Fuel Consumption, U.S. EPA Certified for Stationary Emergency Use Only (Tier 2 Nonroad Equivalent Emission Standards)
Voltage	220 to 13800 Volts
Frequency	50 Hz
Speed	1500 rpm
Duty Cycle	Standby, Mission Critical, Prime, Continuous

Engine Specifications		
Engine Model	C175-16 SCAC, V-16, 4-Stroke Water-Cooled Diesel	
Bore	175 mm	6.89 in
Stroke	220 mm	8.66 in
Displacement	84.7 l	5166.88 in³
Compression Ratio	16:07:01	
Aspiration	Turbo Aftercooled	
Fuel System	Common Rail	
Governor Type	ADEM™ A4	

Generator Set Dimensions		
Length - Minimum	6137 mm	241.6 in
Length - Maximum	7900 mm	311 in
Width - Minimum	2110 mm	83 in
Width - Maximum	2786 mm	108.5 in
Height - Minimum	2211 mm	87 in

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Height - Maximum	3307 mm	130.2 in
Dry Weight - Genset (minimum)	19391 kg	42750 lb
Dry Weight - Genset (maximum)	23020 kg	50750 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 other 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

Alternator

SR5
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 Certification of Conformance (CE)
EEC Declaration of Conformity

One Safe Source

Components used in the generator set are selected based on seamless design integration to provide the optimum 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

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- 4 x Single element canister with service indicator(s)

Control Panel

- EMCP4 / EMCP4.2
- Emergency stop pushbutton
- 24 Volt DC operation
- Environmental sealed front face.
- Text alarm / event descriptions.
- Generator mounted - rear facing
- Controls
- Speed adjust
- Auto / start / stop control.
- Engine cool-down timer.
- Engine cycle crank
- Alarm acknowledge
- Lamp test
- True RMS AC metering, 3-phase, +/-2% accuracy
- Digital Indicators
- 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)
- Warning / shutdown Indicators
- 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
- Over / under frequency

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- Reverse power
- Reverse Reactive Power
- Overcurrent
- 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

Cooling System

- SCAC cooling
- Radiator group - shipped loose
- Fan and belt guards
- Coolant drain line and valves
- Coolant Sensors

Exhaust System

- Dry Exhaust Manifold
- Bolted flange, with bellow for each turbo

Fuel System

- Primary fuel filter water / fuel water separator
- 10 Micron Spin On Type
- Filters x 3
- Secondary / Tertiary fuel filters
- 4 Micron Spin On Type
- Engine mounted filters X3

Generator and Attachments

- 3 Phase Brushless
- Salient pole
- 6 Leads
- IEC Platinum stator RTDs
- Voltage Regulator
- Voltage regulator
- Reactive droop capability
- 3 Phase voltage sensing
- RFI suppression
- Min / max exciter limiter

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- exciter diode monitor
- Form Wound
- Permanent magnet
- NEMA Class H insulation
- Class H temperature rise at 40C ambient
- (LV) Busbar connections, top/center mounted, top cable entry
- 50 Hz models: IEC standard hole pattern
- (MV) Busbar connections, right side extension box, bottom cable entry
- Anti condensation space heater
- Class F temperature rise at 40C ambient
- Right side extension box, bottom cable entry

Governing System

- ADEM A4
- Redundant shutdown (Overspeed protection through a duplicate speed sensing system)

Lube System

- Lubricating oil
- Gear type lube oil pump
- Integral lube oil cooler
- Oil filter, filler and dipstick
- Oil drain lines and valve
- Fumes disposal
- Prelube - required with prime, continuous, and standby

Mounting Systems

- Rails - Engine / generator
- Rubber anti-vibration mounts (shipped loose)
- Dual 24 volt electric starting motors
- Batteries and battery rack w/cables
- Battery disconnect switch

Service Instructions

- Two PM inspections

Power Termination

- Bus Bar

General

- Paint - Caterpillar yellow with high gloss black rails & radiator
- Right hand service
- Flywheel and flywheel housing-SAE No. 00
- SAE standard rotation

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Optional Equipment

Air Inlet System

- Single element air cleaner
- Dual element air cleaner
- Air inlet adapters
- Air inlet protection

Control Panel

- EMCP 4.3, EMCP 4.4
- EMCP 4.4 optional harness
- EMCP and MV&HV power connection locations
- Load share module
- EMCP mounting location - LV / MV
- Customer AC-DC connection mounting location - LV/MV
- Load share module / auxiliary plate and auxiliary box (LV)
- Load share governor
- Frame boxes
- Automatically selected ground
- EMCP voltage and current sensing groups
- Raise lower switch
- Speed adjust
- Annunciator modules
- Customer interface options
- Generator temperature monitoring
- Modbus monitoring of packages
- E-Stop
- Interconnect harness
- Generator Harness

Cooling System

- Package mounted radiator
- Remote radiators
- Fuel cooler

Exhaust System

- Front housing - Standby or mission critical
- Front housing - Prime or continuous
- Exhaust collectors / Manifold
- Exhaust support group
- Mufflers
- Weld flanges

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- Aftercooler drain

Crankcase Systems

- Explosive relief valves
- Crankcase ventilation system

Fuel System

- Primary fuel filter

Generators and Attachments

- Low voltage - 1800 and 3000 Frames - 50 Hz, 3 phase, 1500 rpm, FW, PM, No of leads=6, Pitch 0.6667
- Medium Voltage - 1800 and 3000 Frames - 50 Hz, 3 phase, 1500 rpm, FW, PM, No of leads=6, Pitch 0.6667
- Low Voltage - 1800 and 3000 Frames - 60 Hz, 3 phase, 1800 rpm, FW, PM, No of leads=6, Pitch 0.6667
- Space heater kit
- Thermostat for space heater
- Conversion GP-Top cable entry
- Generator air intake
- Differential current transformers

Instrumentation

- Pyrometer and thermocouples

Lube System

- Lube oil heater
- Drain group oil pans
- Lubricating oil
- Electric prelube pumps
- Oil filters

Mounting

- Rubber anti-vibration mounts
- Spring type linear vibration isolators
- IBC vibration isolators - Shipped loose

Power Connections

- Center post busbars (LV)
- Side / Rear mounted busbars (LV)
- Harnesses (Breaker)
- Cable entry options (LV)
- Enclosures - Control packaging (LV)
- Power connection covers (LV)
- Neutral ground (LV)
- 1800 Frame generators circuit breaker
- Masterpack breakers
- Paralleling circuit breakers

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- 1800 Frame generator side / rear mounted busbars (MV)
- Cable entry options (MV)
- Neutral ground (MV)
- Low voltage connection cable
- Masterpack breaker connections

Special Tests / Reports

- Generator test report
- PGS test report @ 1.0 power factor
- PGS test report @ 0.8 power factor
- Standard genset TVA (Torsional Vibration Analysis) report
- Custom genset TVA report
- Special test charge - Engine only
- Genset fuel consumption test
- Standard engine test charge
- IBC seismic certification
- OSCOSH1 seismic certification

Starting / Charging System

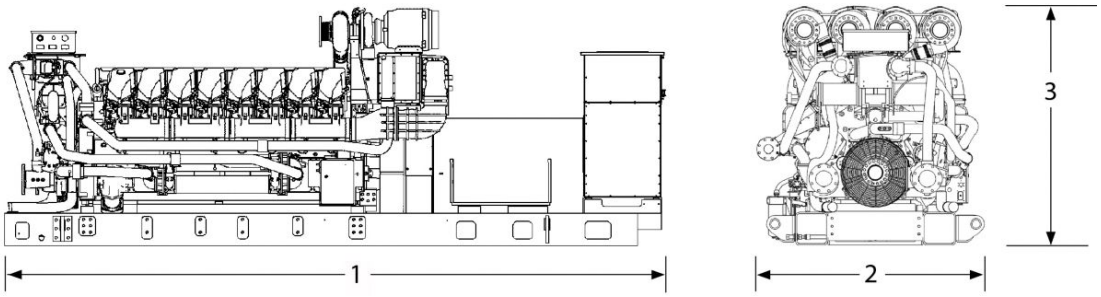
- 24 Volt power distribution box
- 24 Volt electric starting motors
- Air starting motor
- Air pressure regulator
- Starter location covers
- 24 Volt battery sets - Dry
- Heavy duty battery sets with rack
- 20 Amp battery chargers
- 35 Amp battery chargers
- 50 Amp battery chargers
- Charging alternators - Dry
- Jacket water heaters
- Jacket water heater wiring groups

General

- Special paint colors
- Service tools - Engine barring group
- Barring group manual
- Engine barring air powered
- Control GP - Air powered bar group

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Dimensional Art



Dimensions	Dimension 1	Dimension 2	Dimension 3
Genset dimensions	7900 mm (311.0 in)	2756 mm (108.5 in)	3307 mm (130.2 in)

The International System of Units (SI) is used in this publication.
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ELECTRIC POWER - Technical Spec Sheet
STANDARD

C175-16

2400 ekW/ 3000 kVA/ 50 Hz/ 1500 rpm/ 400 V/ 0.8 Power Factor

Rating Type: MISSION CRITICAL STANDBY

Fuel Strategy: LOW EMISSIONS

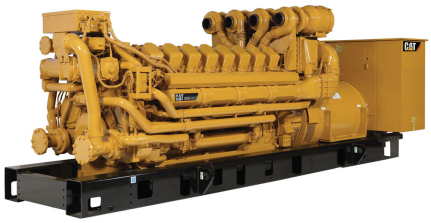


Image shown may not reflect actual configuration

C175-16

2400 ekW/ 3000 kVA

50 Hz/ 1500 rpm/ 400 V

	Metric	English
Package Performance		
Genset Power Rating with Fan @ 0.8 Power Factor	2400 ekW	
Genset Power Rating	3000 kVA	
Aftercooler (Separate Circuit)	48.0 ° C	118.4 ° F
Fuel Consumption		
100% Load with Fan	667.5 L/hr	176.3 gal/hr
75% Load with Fan	535.5 L/hr	141.5 gal/hr
50% Load with Fan	357.2 L/hr	94.4 gal/hr
25% Load with Fan	200.2 L/hr	52.9 gal/hr
Cooling System[1]		
Engine Coolant Capacity	303.5 L	80.2 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	215.3 m³/min	7601.2 cfm
Max. Allowable Combustion Air Inlet Temp	52 ° C	126 ° F
Exhaust System		
Exhaust Stack Gas Temperature	499.7 ° C	931.4 ° F
Exhaust Gas Flow Rate	578.2 m³/min	20418.0 cfm
Exhaust System Backpressure (Maximum Allowable)	6.7 kPa	27.0 in. water

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Rating Type: MISSION CRITICAL STANDBY

Fuel Strategy: LOW EMISSIONS

Heat Rejection		
Heat Rejection to Jacket Water	1269 kW	72155 Btu/min
Heat Rejection to Exhaust (Total)	2595 kW	147577 Btu/min
Heat Rejection to Aftercooler	N/A	N/A
Heat Rejection to Atmosphere from Engine	185 kW	10507 Btu/min
Heat Rejection to Atmosphere from Generator	92 kW	5243 Btu/min

Alternator[2]	
Motor Starting Capability @ 30% Voltage Dip	6187 skVA
Current	4330 amps
Frame Size	1866
Excitation	PM
Temperature Rise	150 ° C

Emissions (Nominal)[3]		
NOx	2068.2 mg/Nm³	4.2 g/hp-hr
CO	285.3 mg/Nm³	0.6 g/hp-hr
HC	37.1 mg/Nm³	0.1 g/hp-hr
PM	15.4 mg/Nm³	0.0 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.

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Rating Type: MISSION CRITICAL STANDBY

Fuel Strategy: LOW EMISSIONS

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.

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 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.

Performance No.: EM0670-02

Feature Code: 175DR24

Generator Arrangement: 3723064

Date: 04/10/2019

Source Country: U.S.

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