

PRELIMINARY SPEC SHEET



Diesel Generator Set – 3,000 ekW – 60 Hz

C175-16 Standby 3,000 ekW / 3,750 kVA- 60 Hz – 1800 RPM 480 – 12,470 – 13,200 – 13,800 and 4,160 Volts

<i>System</i>	<i>Standard</i>
Air Inlet	<ul style="list-style-type: none">• Single element canister type air cleaners• Service indicator
Cooling	<ul style="list-style-type: none">• Radiator with guard (43°C ambient temperature)• Coolant drain line with valve• Caterpillar Extended Life Coolant
Exhaust	<ul style="list-style-type: none">• Dry exhaust manifold• Flanged faced outlets (ANSI / DIN)
Fuel	<ul style="list-style-type: none">• Secondary fuel filters• Fuel priming pump• Flexible fuel lines• Fuel cooler (optional)
Generator	<ul style="list-style-type: none">• IE (LV) and PMG (MV, HV)• Class H insulation• Class H temperature (150°C rise)• CDVR voltage regulator• Reactive droop• Bus bar connections• Winding temperature sensors std PM @ 480 Volt (opt for LV)• Anti-condensation space heaters (opt for LV)• Bearing temperature sensors – option (opt for LV)
Governing System	<ul style="list-style-type: none">• Caterpillar ADEM™ A4 speed control governor
Control Panels	<ul style="list-style-type: none">• EMCP 3 (package mounted)
Lube System	<ul style="list-style-type: none">• Lubricating oil and filter• Oil drain line with valves• Fumes disposal• Gear type lube oil pump
Mounting	<ul style="list-style-type: none">• Rubber, anti-vibration mounts (shipped loose)
Starting/Charging	<ul style="list-style-type: none">• 24 Volt starting motor(s)• 45 Amp charging alternator• Batteries with rack and cables• Battery disconnect switch
General	<ul style="list-style-type: none">• Right-hand service• Paint – Caterpillar Yellow except rails and radiators gloss black• SAE standard rotation• Flywheel and flywheel housing – SAE No. 0
Note	For any additional options, consult the factory

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Specifications

CAT Generator

ExcitationIE
Pitch.....2/3
Number of poles 4
Number of bearings 2
Insulation UL 1446 Recognized Class H
IP rating Drip Proof IP23
Alignment closed coupled
Overspeed capability - % of rated 125
Wave form Less than 5% deviation
Paralleling kit/Droop transformer Standard
Telephone Influence Factor Less than 50
Harmonic distortion Less than 5%

CAT Digital Voltage Regulator

Microprocessor based
VAR/PF control Standard
Direct 3 Phase sensing with selectable volts/Hz
Communicates with EMCP 3
Programmable operating characteristics
Voltage regulation ... Less than +/- 0.25% (steady state), Less than +/- 1% (no load to full load)
Compatible with self-excited, PMG, and IE

CAT Diesel Engine

C175-16, 4-stroke-cycle water-cooled diesel
Bore – mm 175 mm (6.89 in)
Stroke – mm 220 mm (8.66 in)
Displacement – L 84.6 L (5165.1 cu. in)
Compression ratio 15.3:1
Aspiration SCAC
Fuel system Common Rail
Governor type Caterpillar ADEM™ A4

CAT EMCP3 Control Panels

- EMCP 3.1 (Standard)
- EMCP 3.2 & 3.3 (Optional)
- 24 Volt DC control
- Generator instruments designed to meet UL/CSA/CE/UL508A
- Integral generator terminal box
- Single location for customer connection
- MODBUS isolated data link (RS-485 half-duplex) supports serial communication at data rate up to 115.2 kbaud
- Auto start/stop control
- True RMS metering, 3-phase
- Digital indication for:
 - RPM
 - Operating hours
 - Oil pressure
 - Coolant temperature
 - System DC volts
 - L-L Volts, L-N Volts, phase amps, Hz
 - kW, kVA, kVAR, kW-hr, %kW, PF
- Shutdowns with indicating lights for:
 - Low oil pressure
 - High coolant temperature
 - Low coolant level
 - Overspeed
 - Emergency stop
 - Failure to start (over crank)
- Programmable protective relay functions:
 - Under and over voltage
 - Under and over frequency
 - Reverse power
 - Overcurrent (phase & total)
- Programmable kW level relay

CAT Control Options

- Programmable annunciator (local and remote or both) (2 max)
- Spare discrete I/O (16 in/8 out) (1 max)
- Generator temperature monitor/protection (stator & bearing)
- Engine temperature monitor/protection

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Generator Set Technical Data

C175-16, 60Hz, 1800 RPM	Standby – EPA Tier 2		Standby – Low BSFC	
Package Performance				
Genset Power rating with fan	3,000 ekW		3,000 ekW	
Genset Power rating @ 0.8 pf	3,750 kVA		3,750 kVA	
Fuel Consumption				
100% load with fan	794.3 L/hr	209.8 Gal/hr	794.3 L/hr	209.8 Gal/hr
75% load with fan	579.9 L/hr	153.2 Gal/hr	561.6 L/hr	148.4 Gal/hr
50% load with fan	423.9 L/hr	112.0 Gal/hr	382.7 L/hr	101.1 Gal/hr
Cooling System				
Radiator air flow rate @ 0.5 external static restriction	3602.2 m ³ /min	127,212 cfm	3602.2 m ³ /min	127,212 cfm
Inlet Air				
Combustion air inlet flow rate	269 m ³ /min	9,499.6 cfm	269 m ³ /min	9,499.6 cfm
Exhaust System				
Exhaust stack gas temperature	440°C	824°F	440°C	824°F
Exhaust gas flow rate	642 m ³ /min	22,672.0 cfm	642 m ³ /min	22,672.0 cfm
Exhaust flange size (internal diameter)	355.6 mm	14 in.	355.6 mm	14 in.
Exhaust system backpressure (maximum allowable)	5 kPa	20 in. H ₂ O	5 kPa	20 in. H ₂ O
Heat Rejection				
Heat rejection to coolant (total)	1,981.8 kW	112,802.5 Btu/min	1,981.8 kW	112,802.5 Btu/min
Heat rejection to exhaust (total)	2,643.6 kW	150,475.5 Btu/min	2,643.6 kW	150,475.5 Btu/min
Heat rejection to aftercooler	460.9 kW	26,233.1 Btu/min	460.9 kW	26,233.1 Btu/min
Heat rejection to atmosphere from engine	91.3 kW	5,194.2 Btu/min	91.3 kW	5,194.2 Btu/min
Noise				
Exhaust Sound Data: 23.0 Feet @ 100% Load	Overall Sound DB(A) n/a		Overall Sound DB(A) n/a	
Mechanical Sound Data: 23.0 Feet @ 100% Load	Overall Sound DB(A) n/a		Overall Sound DB(A) n/a	
Emissions (Estimate Nominal)	<u>@ EPA Tier 2</u>		<u>@ rated performance</u>	
NOx g/hp-hr	4.8 g/hp-hr (Nox + NMHC)		5.99 g/hp-hr	
HC g/hp-hr	n/a g/hp-hr		0.097 g/hp-hr	
CO g/hp-hr	2.6 g/hp-hr		0.41 g/hp-hr	
PM g/hp-hr	0.15 g/hp-hr		n/a g/hp-hr	

Ambient capability at 750 m (2,461 ft) @ 43°C above sea level. For ambient capability at other altitudes, consult the Caterpillar factory.

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Preliminary Package Dimensions without Radiator

1840 Frame Package Dimensions		
Length	5,894.8 mm	227.7 in
Width	1,650.5 mm	65.0 in
Height	2,248.5 mm	88.5 in
Weight	18,800 kg	41,500 lbs

Note: Do not use for installation design.
Consult factory for final configuration.

1860 Frame Package Dimensions		
Length	6,004.8 mm	236.4 in
Width	1,650.5 mm	65.0 in
Height	2,248.5 mm	88.5 in
Weight	18,800 kg	41,500 lbs

Note: Do not use for installation design.
Consult factory for final configuration.

3020 Frame Package Dimensions		
Length	6,009.4 mm	236.58 in
Width	1957.3 mm	77.05 in
Height	2276.4 mm	89.62 in
Weight	20,089 kg	44,288.6 lbs

Note: Do not use for installation design.
Consult factory for final configuration.

Generator Technical Data

C175-16, Standby, 60Hz, 1800 RPM	480 Volts (std)	480 Volts (opt)	4,160 Volts (opt)
Heat Rejection Heat rejection to atmosphere from generator	105.59 kW 6,010.2 Btu/min	95.98 kW 5,463.2 Btu/min	99.17 kW 5,644.7 Btu/min
Generator Motor starting capability @32.5% voltage dip, 0.4 PF Frame Winding Temperature Rise	7070 skVA 1846 Random 150°C 302°F	8233 skVA 1866 Form 150°C 302°F	9604 skVA 1846 Form 150°C 302°F

Generator temperature rise is based on a 40°C ambient per NEMA MG1-32.

12,470 Volts (opt)	13,200 Volts (opt)	13,800 Volts (opt)
144.7 kW 8,228.9 Btu/min	144.7 kW 8,228.9 Btu/min	144.7 kW 8,228.9 Btu/min
7548 skVA 3020 Form 130°C 266°F	6924 skVA 3020 Form 130°C 266°F	7505 skVA 3020 Form 130°C 266°F

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Preliminary Horizontal Radiator Dimensions

	43°C Radiator	
Length	4,714.2 mm	185.6 in
Width	2,279.7 mm	89.75 in
Height	2,561.8 mm	100.86 in
Weight	5,102 kg	11,248 lbs

Note: Do not use for installation design.
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Rating Definitions and Conditions

Meets or Exceeds International Specifications: ABGSM TM3, AS1359, AS2789, BS4999, BS5000, BS5514, DIN6271, DIN6280, EGSA101P, IEC34/1, ISO3046/1, ISO8528, JEM1359, NEMA MG 1-32

Ratings are based on SAE J1995 standard conditions. These ratings also apply at ISO3046/1, DIN6271, and BS5514 standard conditions.

Fuel rates are based on fuel oil of 35° API (16°C or 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.)

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