

# Cat® XQP20 Rental Generator Set



**Prime 20 kVA (16 kW)**  
**50 Hz**  
**EU Stage V**

Image shown may not reflect actual configuration.

## Specifications

Frequency Hz	Speed (rpm)	Voltage	Prime		Output Amps (A)	Breaker Rating (A)
			kVA	kW		
50	1500	415 / 240 V	20	16	31	40
		400 / 230 V	20	16	32	
		380 / 220 V	20	16	34	

Cat® C2.2 Diesel Engine	Metric	Imperial (English)
Configuration	Inline 4-cylinder, 4-Stroke-Cycle, Water Cooled, Diesel	
Bore	84 mm	3.3 in
Stroke	100 mm	3.9 in
Displacement	2.2 L	134 in <sup>3</sup>
Aspiration	Naturally Aspirated	
Compression Ratio	23.3:1	
Engine rpm	1500	
Fuel System	Indirect Injection	
Governor Type	Mechanical	
Fuel	See Fuel Specification Table	

## Benefits & Features

### Rental-ready Features

- 12 hr dual wall fuel tank with tie down points and robust skid plate base
- Externally certified single point lift
- Coolant and drain lines
- Externally certified spark arrester/silencer
- 50 Hz frequency
- Optimized cable entry for easy hook-up
- Robust busbar connection for lugged cable connection
- Sound isolated side mounted control panel with integrated power distribution access
- AC protected by limit switch on distribution door
- Enclosure protection

### Fuel/Emissions Strategy

- EU Stage V

### Single-source Supplier

- Factory designed and fully prototype tested with torsional vibration analysis available
- ISO 9001:2000 compliant facility

### Cat® C2.2 Diesel Engine

- Four-stroke diesel engine combines consistent performance and excellent fuel economy with minimum weight

### Cat GCCP1.3 Control Panel

- Fully featured power metering, protective relaying, engine/generator control and monitoring
- Simple user-friendly interface and navigation

### Cat LC1100 Generator

- Designed to match performance and output of Cat diesel engines
- Coastal insulation protection
- Self (shunt) excitation

### R220 Automatic Voltage Regulator (AVR)

- Provides precise control, excellent block loading, and constant voltage in the normal operating range

### Enclosure

- Galvanized sheet steel construction
- Two coat polyester powder-coated finish
- 6 access doors for improved service access
- Secure design with safety glass control panel viewing window and padlockable or keylock access doors
- Fuel fill, battery and controls accessible only through lockable access doors

### Environmental Considerations

- Dual wall base tank
- 110% spill containment of all on-board engine fluids
- Bund level alarm
- Low noise enclosure
- Inboard mounted 3-way valve for external fuel connection

### Cat Connect

- Fleet management and asset tracking\*

*\*Subject to local certifications*

### Options

- CE socket box with integrated breaker protection
- CEE sockets with protection
- Anti condensation heater 230V AC
- Coolant heater 230V AC
- 12V battery charger
- Earth leakage detection
- Earth Fault detection
- Lube oil sump pump
- Common Alarm
- Volt Free Contacts for Genset running
- Forklift pockets

## Standard Equipment

### Generator and Voltage Regulation

- Screen protected and drip-proof (IP23), self-regulating, 12-lead, 4-pole, brushless generator
- Sealed-for-life bearing
- Electrical design in accordance with IEC60034-1, EN61000-6, NEMA MG-1.22, and CSA
- Self-excited for self-protection against short circuits
- Insulation System:
  - o Class H insulation system
  - o Windings are impregnated in a thermo-setting moisture, oil, and acid resisting varnish
  - o Heavy coat of anti-tracking varnish for additional protection against moisture or condensation (CIP)
- Wave form distortion, THF, and TIF Factors:
  - o Total distortion of voltage waveform with open circuit between phases of Total distortion <5%, on a 3-phase, balanced, harmonic-free load
  - o Total distortion <2%, under no load
  - o Waveform: NEMA (TIF <50)
  - o 2/3 pitch standard on all stator windings

### Cat® C2.2 Diesel Engine

- Cat C2.2 heavy-duty, EU-V certified
- Block heater, 220 VAC
- Requires Ultra Low Sulfur Diesel (ULSD) fuel
- Engine Electrical System:
  - o 12-volt, DC electrical system
  - o 65amp, DC charging alternator
  - o Oil pressure, coolant temperature, and coolant level shutdown switches
- Engine Filtration System:
  - o Canister type air filter with service indicator
  - o Cartridge-type fuel filter with upstream pre-filter and water separator
  - o Spin-on, full-flow lube oil filter, requires API CH-4 lube oil (or later)
- Regulator and belt guards

### Generator Set Packaging

- Base frame and containment tray
  - o Heavy-duty, fabricated steel base frame with specially designed lifting points
  - o Spill containment attached to base frame, with leak-detection switch
- Canopy
  - o Sound attenuated to 65 dBA at 7m (23 ft)
  - o Single door access on each side, and one dedicated access for power distribution and control panel access

### Generator Set Packaging (cont'd.)

- Cooling System:
  - o Radiator with protective guards
  - o Ambient clearance – 45 Deg @ Prime Power
- Electrical System:
  - o 12-volt, DC electrical system
  - o Battery disconnect switch (Optional)
- Engine and generator mounting
  - o Engine and generator are directly coupled by an SAE flange
  - o Engine flywheel is flexibly coupled to the generator rotor, with full torsional analysis completed to ensure no harmful vibration will occur in the assembly
  - o Anti-vibration pads between engine/generator feet and base frame
- Fuel System:
  - o 12-hour runtime @ 75% prime load

### Generator Controls and Power Distribution

- Industry leading Caterpillar GCCP1.3 Diesel Generator Set Digital Controller
- Circuit Breaker: 4-pole breaker, 35A with Shunt trip
- Safety switch on hinged main bus cover-trips breaker if cover is opened
- Two-wire, remote start-stop terminals
- Customer auxiliary power connections (Optional):
  - o CEE Sockets
  - o Each receptacle is protected by a miniature circuit breaker, which also acts as an on/off switch
- Main customer connections:
  - o Copper bus bars with phase separators, located behind a protective door with shunt trip switch
  - o Bus bars sized for full load capacity of generator set at 0.8 power factor

### Quality and Product Support

- Factory load-testing of complete generator set
- Factory test certificate available upon request
- Equipment meets the following standards: IEC60034, EN61000-6
- Full set of operation and maintenance manuals
- walls, ceilings and ducts insulated with precision cut noise insulating materials
- Outlet box mounted with vertical discharge

## Fuel Specifications

Specification Standard	Grade Class	Fuel Description
EU Stage V specifies Ultra Low Sulphur Diesel		<p>Ultra-Low Sulphur Diesel Only (ULSD).</p> <p>ULSD with a maximum fuel sulphur level of either 15 or 20 ppm1 is required.</p> <p>Bio-diesel fuel may be used up to B20 (80% standard ULSD with 20% bio-fuel dilution by volume), provided an appropriate approved additive is used.</p>

## Oil Specifications

Specification Standard	Oil Description
EU Stage V Recommended oil 15W-40 CK-4 1E1867F	CAT DEO-ULS (Preferred)

## DEF Specifications

Specification Standard	DEF Description
EU Stage V DEF Requirements ISO 22241-1	Diesel Exhaust Fluid

## Technical Data

Cat® Generator	
Frame size	LC1114M
Pitch	2/3
No. of poles	4
Excitation	Static regulated, brushless, self excited
Number of bearings	Single bearing, close coupled
Insulation	Class H
Temperature rise	125/40°C
Enclosure	Drip proof IP23
Overspeed capability — % of rated	25%
Voltage regulator	R220
Voltage regulation	Less than ± 0.5%
Wave form deviation Telephone Influence Factor (TIF) Harmonic Distortion (THD)	Less than 5% Less than 5%

Cat Generator Set		
	TMI Performance No. Units	Prime — 50 Hz P6324B
<b>Power Rating</b>	kVA (kW)	20 (16)
<b>Performance Specification</b>		
<b>Lubricating System</b>		
Oil pan capacity	L (gal)	6 (1.6)
<b>Fuel System</b>		
Fuel consumption — 100% Load	L/hr (gal/hr)	5.5 (1.45)
75% Load	L/hr (gal/hr)	4.0 (1.05)
50% Load	L/hr (gal/hr)	3.0 (0.76)
Fuel tank capacity	L (gal)	56 (14.8)
Running time @ 75% rating	Hr	13
<b>Cooling System</b>		
Ambient capability @ 750m	°C (°F)	45 (113)
Engine & radiator coolant capacity	L (gal)	10.6 (2.8)
Engine coolant capacity	L (gal)	7.0 (1.8)
<b>Air Requirements</b>		
Combustion air flow at 110% Load	m <sup>3</sup> /min (cfm)	6.7 (236.6)
<b>Exhaust System</b>		
Exhaust flow at rated — dry exhaust	m <sup>3</sup> /min (cfm)	3.64 (128)
Exhaust temperature at rated kW	°C (°F)	490 (914)

## Technical Data (continued)

Cat Generator Set		
	TMI Performance No. Units	Prime — 50 Hz P6324B
<b>Noise Rating (with enclosure) **</b>		
<b>Sound Power*</b>	dB(A)	90
@ 7 meters @ 75% load	dB(A)	64
@ 7 meters @ 100% load	dB(A)	65
@ 1 meter @ 75% load	dB(A)	72
@ 1 meter @ 100% load	dB(A)	73
<b>Emissions data at 100% Load</b>		
NOx	g/hp-hr	3.72
CO	g/hp-hr	1.25
HC	g/hp-hr	—
PM	g/hp-hr	—

\*\*Guaranteed sound power as per 2000/14/EC

For full Engine & Emissions data please refer to TMI using the engine performance no.

## Weights & Dimensions

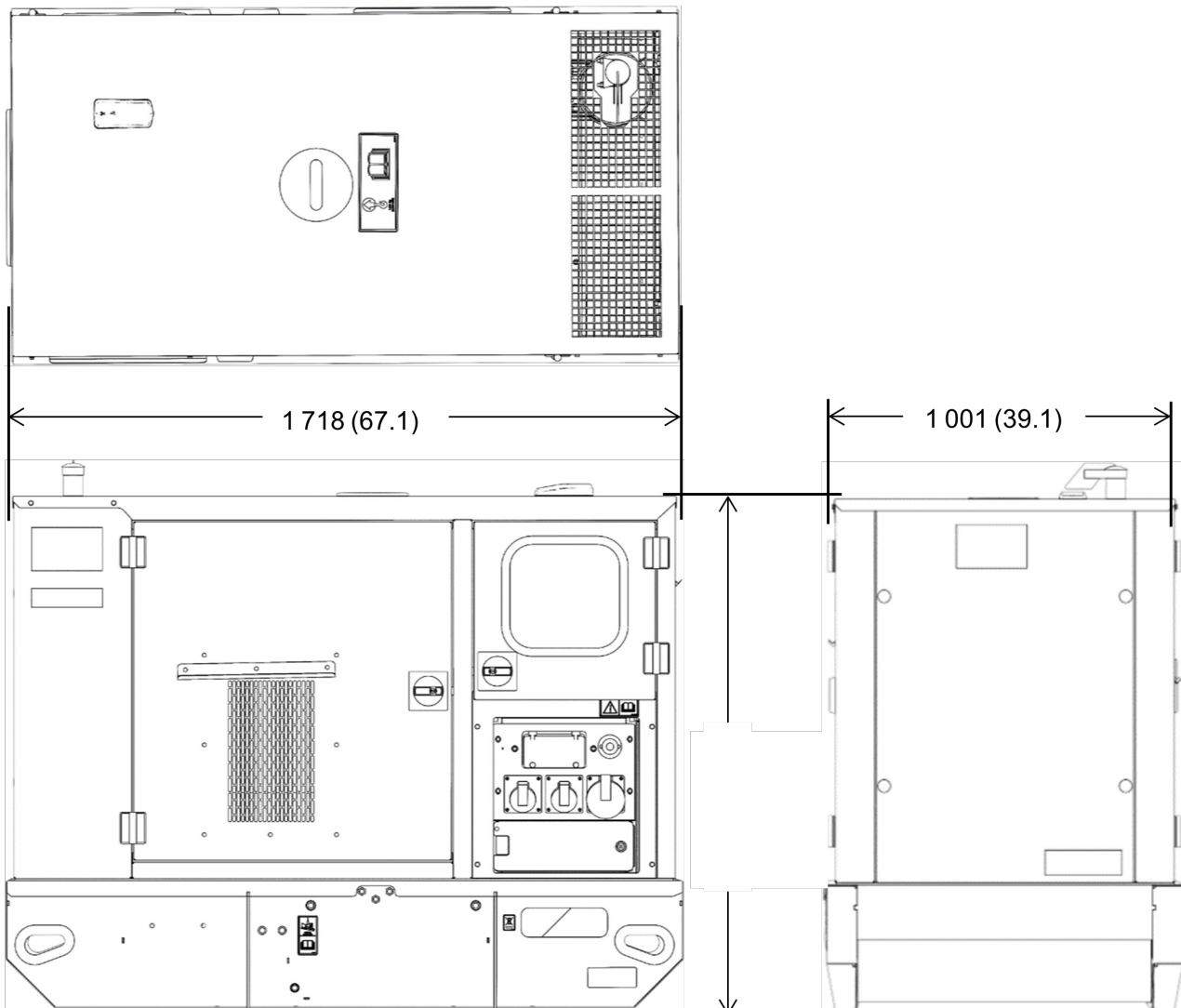
Dimensions	Length mm (in)	Width mm (in)	Height mm (in)
Generator Set	1 718 (67.1)	1 001 (39.1)	1 300 (50.78)

Weight	Weight — kg (lb)
Lube Oil & Coolant — Empty Fuel Tank	752 (1 654)
Full Fuel Tank	815 (1 793)

Socket Box Option						
Sockets	15A	16A	32A	50A	63A	125A
CEE Form*	-	2x1ph+N+E	2x3ph+N+E	-	-	-

## Layout for General Dimensions

Dimensions in millimeters (inches)



## Rating Definitions and Conditions

**Designed to Meet Specifications:** ISO 8528, EN 12601, EN 60204-1, ISO 3046, IEC 60034.

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

**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 kW with 10% overload capability for emergency use for a maximum of 1 hour in 12. Overload operation cannot exceed 25 hours per year.

**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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