



Picture shown may not reflect actual package.

**STANDBY
PRIME**

60 Hz

**100 kW
90 kW**

FEATURES

EPA TIER II AND CARB CERTIFIED FOR NON-ROAD MOBILE APPLICATIONS

SOUND ATTENUATED ENCLOSURE

- The fully weatherproof enclosures incorporate internally mounted exhaust silencers and are of extremely rugged construction in order to withstand the rough handling common on many construction sites. They are designed on modular principles with many interchangeable components permitting on site repair.
- Highly corrosion resistant construction.
 - Body made from sheet steel components pretreated with zinc phosphate prior to polyester powder coating at 200° C (392° F)
 - Black stainless steel padlockable latches.
 - Zinc die cast hinges/grab handles.
- Excellent access for maintenance.
 - Two large doors on each side. Rear door for distribution/control panel.
 - Front panel for air discharge box access.
 - Lube oil and cooling water drains piped to exterior of the enclosure.
- Security and safety.
 - Safety glass control panel viewing window in a lockable access door.
 - Emergency stop button on enclosure exterior.
 - Cooling fan and battery charging alternator fully guarded.
 - Fuel fill and battery can only be reached through lockable access doors.
- Transportability.
 - Tested and certified single point lifting eye.
 - Lifting points on baseframe.

ROBUST DESIGN FOR RENTAL ENVIRONMENT

- Packages designed to survive in rugged and maintenance starved environment.

MULTI-VOLTAGE DISTRIBUTION PANEL

- Simultaneous 3-phase voltage output: 480/277 volt, 208/120 volt and adjustable for 3-phase 240 volt output.*

REAR CUSTOMER ACCESS

- Access through two doors.
- Separate control panel access.
- Separate connection console.
- Hinged door over main connectors.
- Emergency stop on panel.

ENVIRONMENTALLY FRIENDLY DESIGN

- EPA Tier II off-highway compliant engine.
- UL double walled fuel tank base with 24 hour minimum fuel supply.
- Containment area for oil, coolant and fuel spill.

ELECTRONIC GOVERNING

- Isochronous.
- Fully adjustable.

OPTIONS

- AH1L – Anti-condensation heater 110-120 volt AC
- WHL – Coolant heater 110-120 volt AC
- LOLR – Lube oil make-up system with REN automatic leveller

* Refer to distribution panel specifications for details.

STANDARD FEATURES

1. ENGINE

Heavy duty industrial EPA compliant diesel engine.

1.1 Governor

Electronic, compliant with BS5514, Class A1.

1.2 Electrical System

12 volt DC. Energized to run shutdown solenoid. Oil pressure and coolant temperature/level shutdown switches and gauge senders.

1.3 Derates

Genset power derates will be required in accordance with engine manufacturers above 30° C (86° F).

2. COOLING RADIATOR

Radiator and cooling fan complete with protection guards, designed to cool the engine in ambient temperatures up to 49° C (120° F).

3. ENGINE FILTRATION SYSTEM

Cartridge type dry air filters with restriction indicator. Racor fuel filter in addition to engine filter. Cartridge type fuel filters and full flow lube oil filters. All filters have replaceable elements.

4. EXHAUST SYSTEM

Critical silencer with flexible connector. All internal pipework lagged.

5. ELECTRICAL SYSTEM

12 volt system with battery charging alternator, and starter motor on engine, battery rack mounted on the generator set baseframe and battery charger mounted on control panel. Battery rack will accept a variety of battery sizes.

6. GENERATOR

Screen protected and drip-proof, self exciting, self-regulating brushless generator with fully interconnected damper windings, IC06 cooling system and sealed-for-life bearings. Simultaneous multi-voltage output.

6.1 Insulation System

The insulation system is Class H. Windings are impregnated in a triple dip thermo-setting moisture, oil and acid resisting polyester varnish. Heavy coat of anti-tracking varnish for additional protection against moisture or condensation.

6.2 Electrical Characteristics

Electrical design in accordance with BS5000 Part 99, IEC60034-1, EN61000-6, NEMA MG-1.22.

6.3 Automatic Voltage Regulator (AVR)

The fully sealed automatic voltage regulator maintains the voltage within the limits of $\pm 0.5\%$ at steady state from no load to full load.

Nominal adjustment is by means of a trimmer incorporated in the AVR. The panel door incorporates an additional voltage adjustment potentiometer.

6.3.1 Permanent Magnet Generator

Providing 350% short circuit capabilities, enhanced motor starting and non-linear loading performance.

6.4 Waveform Distortion, THF and TIF Factors

The total distortion of the voltage waveform with open circuit between phases or phase and neutral is in the order of 1.8. On a 3-phase balanced harmonic-free load the total distortion is $< 4\%$. Machines are designed to have a THF less than 2% and a TIF less than 50. A 2/3 pitch factor is standard on all stator windings.

6.5 Radio Interference

Suppression is in line with the provisions of EN61000-6.

7. MOUNTING ARRANGEMENT

7.1 Baseframe

The complete generator set is mounted on a heavy duty fabricated steel baseframe. The baseframe includes a UL listed closed top fuel tank and incorporates specially designed lifting points.

7.2 Coupling

The engine and generator are directly coupled by means of an SAE flange so that there is no possibility of misalignment after prolonged use. The engine flywheel is flexibly coupled to the generator rotor and a full torsional analysis has been carried out to guarantee no harmful vibration will occur in the assembly.

7.3 Anti-Vibration Mounting Pads

Captive anti-vibration pads are affixed between engine/generator feet and the baseframe ensuring complete vibration isolation of the rotating assemblies and enabling the machine to be placed on an uneven surface without detrimental effects.

7.4 Safety Guards

The fan, fan drive and battery charging generator drive are fully guarded for personnel protection. Heat guards protect personnel from the exhaust pipe. All guards are to OSHA standards.

8. FUEL SYSTEM

Fuel feed and return lines to the engine are terminated at the baseframe mounted 24 hour extended capacity fuel tank. The entire fuel system is surrounded by a catchment area to prevent leakage. 3-way valves allow connection of auxiliary fuel tank.

9. CONTROL SYSTEM

9.1 Control Panel

Set mounted autostart panel in a vibration isolated NEMA 1 sheet steel enclosure with a hinged lockable door.

a. DC and AC Wiring Harnesses

DC and AC wiring harnesses utilizing industrial type multi-pin connectors to permit fast fault finding.

9.2 Circuit Breakers, Two

3-pole UL CSA listed molded case circuit breaker mounted on the generator set in a vibration isolated NEMA 1 distribution panel.

9.3 Small power receptacles housed in a NEMA 1 distribution panel.

Receptacles accept industry standard male plugs. Each receptacle is protected by a miniature circuit breaker which also acts as an on/off switch.

10. DOCUMENTATION

A full set of operation and maintenance manuals, circuit wiring diagrams, and instruction leaflets is provided.

11. SOUND ATTENUATED ENCLOSURES

A noise reducing enclosure surrounds the entire generator set. Combined with a critical engine silencer this provides an overall noise reduction from 65 to 68 dBA at 23 feet through the range.

12. FACTORY TESTS

The generator set is load tested before dispatch. All protective devices, control functions and site load conditions are simulated; the generator and its systems checked, proved and then passed for dispatch.

13. EQUIPMENT FINISH

All sheet metal components including the enclosure and the base tank are fully degreased, phosphated and chromated for anti-corrosive protection prior to painting with polyester powder. The powder is cured at a temperature of 200° C (392° F) to ensure maximum scuff resistance and durability. All fasteners are electroplated. The engine and generator are thoroughly cleaned and finished in temperature controlled ovens with industrial high gloss polyurethane paint.

14. STANDARDS

The equipment meets the following standards: BS4999, BS5000, BS5514, IEC60034, EN61000-6, NEMA MG-1.22.

15. WARRANTY

Full manufacturer's warranty.

XQ100-4

Materials and specifications are subject to change without notice.

Generator Set Technical Data – 1800 rpm/60 Hz			Standby		Prime	
Power Rating	kW	kVA	100	125	90	112.5
Lubricating System						
Type: full pressure						
Oil filter: spin-on, full flow						
Oil cooler: water cooled						
Oil type required: API CF-4						
Total oil capacity	L	U.S. gal	16.1	4.3	16.1	4.3
Oil pan	L	U.S. gal	13.1	3.5	13.1	3.5
Fuel System						
Fuel filter type: replaceable element						
Recommended fuel: #2 diesel						
Generator set fuel consumption						
100% load	L/hr	gal/hr	30.3	8.0	26.6	7.0
75% load	L/hr	gal/hr	23.42	6.18	20.4	5.4
50% load	L/hr	gal/hr	16.95	4.47	14.4	3.8
Fuel tank capacity	L	U.S. gal	730	193	730	193
Engine Electrical System						
Voltage/ground: 12/negative						
Battery charging generator ampere rating	amps		45		45	
Cooling System						
Water pump type: centrifugal						
Radiator system capacity including engine	L	U.S. gal	12.6	3.31	12.6	3.32
Maximum coolant static head	m H ₂ O	ft H ₂ O	TBC		TBC	
Minimum temperature to engine	°C	°F	70	158	70	158
Temperature rise across engine	°C	°F	5.5	9.9	5.0	9
Heat rejected to coolant at rated power	kW	Btu/min	65.6	3,733	59.7	3,397
Radiator fan load	kW	hp	5.0	6.7	5.0	6.7
Air Requirements						
Combustion air flow	m ³ /min	cfm	7.79	279	7.38	260
Maximum air cleaner restriction	kPa	in H ₂ O	5.0	20	5.0	20
Radiator cooling air (within enclosure)	m ³ /min	cfm	186	6,568	186	6,568
Generator cooling air	m ³ /min	cfm	26.4	932	26.4	932
Exhaust System						
Exhaust backpressure (measured)	kPa	in Hg	2.6	10.43	2.2	8.83
Exhaust flow at rated kW	m ³ /min	cfm	22.5	794	20	704
Exhaust temperature at rated kW – dry exhaust	°C	°F	580	1,076	540	1,004
Generator Set Noise Rating*						
[with enclosure at 7 meters (23 feet)]	dBA		68.7		68.3	

*dBA levels are for guidance only

SPECIFICATIONS

GENERATOR

Voltage regulation ± 0.5% at steady state
from no load to full load

Frequency ± 0.25% for constant load from
no load to 100% load

Waveform distortion THD < 4%

Radio interference Compliance with EN61000-6

Telephone interference TIF < 50, THF < 2%

Overspeed limit 2250 rpm

Insulation Class H

Temperature rise Within Class H limits

Available voltages Simultaneous 3-phase voltage output:
480/277 volt, 208/120 volt and
adjustable for 3-phase 240 volt output

Deration Consult factory for available outputs

Ratings At 30° C (86° F), 152.4 m (500 ft)
60% humidity, 0.8 pf

ENGINE

Manufacturer Caterpillar

Model C 4.4

Type 4-cycle

Aspiration Turbocharged

Cylinder configuration In-line 4

Displacement – L (cu in) 4.4 (269)

Bore – mm (in) 105 (4.13)

Stroke – mm (in) 127.0 (5.0)

Compression ratio 18.3:1

Governor

Type Electronic

Class G2

Air cleaner type Dry, replaceable paper element,
type with restriction indicator

Piston speed – m/sec (ft/sec) 7.62 (25.0)

Engine speed – rpm 1800

Maximum power at rated rpm – kW (hp)

Standby 117.5 (157.5)

Prime 106.9 (143.2)

BMEP – kPa (psi)

Standby 1778 (258)

Prime 1616 (234)

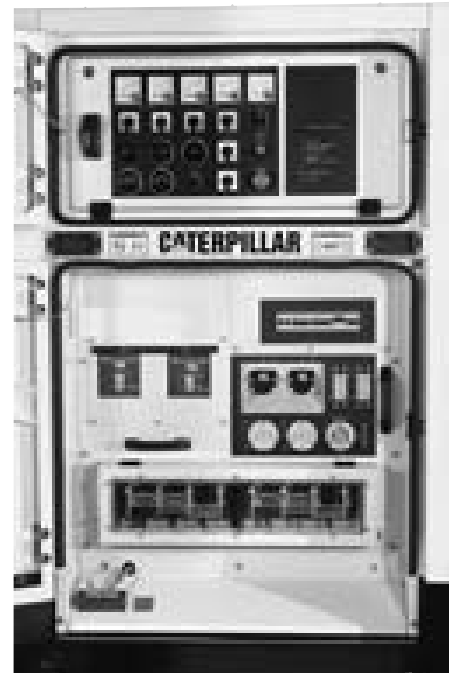
Regenerative power – kW (hp) 13.8 (18.5)

CONTROL PANEL – 4000 XQ

- NEMA 1 steel enclosure with hinged lockable door with viewing window.
- Manual run/off/auto control switch.
- Separate Pre-Heat push button.
- Red emergency stop push button.
- Lamp test/reset push button/activates fuel gauge.
- AC instrumentation: 1-voltmeter, 1-ammeter, 1-frequency meter.
- Engine gauges for: oil pressure, coolant temperature, battery volts, fuel level.
- Fuel level display with momentary activation.
- Battery charger, 3 amp float/equalize, UL listed.
- Hours run meter.
- Voltage adjust potentiometer.
- Speed adjust potentiometer.
- Cycle cranking with 3 adjustable time crank/rest periods.
- 2 – 7 Position voltmeter phase selector switch.
- 2 – 4 Position ammeter phase selector switch.
- Shutdowns: High coolant temperature/low coolant level, low oil pressure, overcrank, overspeed.
- Low fuel level/fuel tank leak, low battery volts alarms.
- Printed circuit board control logic.
- Panel light.

DISTRIBUTION PANEL

- NEMA 1 steel enclosure with hinged lockable door.
- 2 – 3-pole MCCB's with solid neutral (4 wire). UL/CSA listed with shunt trip.
- Integral trip unit for thermal and magnetic overload protection on MCCB's.
- Main bus connection studs enclosed with hinged transparent cover for easy access and operator safety.
- Separate bus connection studs for 480/277 volt and 208/120 volt, 3-phase simultaneous output.*
- 240/139 volt, 3-phase available from 208/120 volt bus bar connections with voltage adjustment.**



- 2 – Single phase – California style Twistlocks, 50 amps @ 208 volt phase to phase, 120 volt phase to neutral or 240 volt phase to phase, 139 volt phase to neutral.
- 2 – Single phase – GFCI Duplex receptacles, 20 amps @ 120 volts.***
- 2 – Three phase – NEMA locking receptacles, 20 amps @ 208/120 volts.***
- 1 – Single phase – NEMA locking inlet receptacle for 125 volt, 30 amp rated auxiliary supply.
- Individual circuit breaker protection for receptacles. Also act as on/off switches.
- Two wire remote start connection terminals.

* Either set of bus bars is capable of supplying up to full rating. Total load from bus bars and receptacles cannot exceed rating of generator set. Generator is wye connected in all cases.

** High voltage bus connections not useable with low voltage adjusted to 240 volts.

*** Receptacles not for use with low voltage adjusted to 240 volts.

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100 kW
90 kW



Model	Length mm (in)	Width mm (in)	Height mm (in)	Weight	
				With Lube Oil and Coolant kg (lb)	With Fuel, Lube Oil and Coolant kg (lb)
XQ100-4	3170 (124.8)	1130 (44.5)	1870 (73.6)	2560 (5645)	3173 (6996)

RATING DEFINITIONS

Standby – Applicable for supplying continuous electrical power (at variable load) in the event of a utility power failure. No overload is permitted on these ratings. The generator on the generator set is peak prime rated (as defined in ISO8528-3) at 30° C (86° F).

Prime – Applicable for supplying continuous electrical power (at variable load) in lieu of commercially purchased power. There is no limitation to the annual hours of operation and the generator set can supply 10% overload power for 1 hour in 12 hours.

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