

XQ1750 GENERATOR



SPECIFICATIONS

GENERATOR

Type	Static regulated brushless PM excited
Construction.	Single bearing, close coupled
Three phase.	wye connected, six lead
Insulation.	Class H - two extra dips and bakes on random wound units
Enclosure.	Drip proof
Alignment.	Pilot shaft
Overspeed capability.	130%
Voltage regulator	3 phase sensing with Volts-per-Hertz
Voltage regulation.	Less than \pm 1%
Voltage gain	Adjustable to compensate for engine speed droop and line loss
Wave form.	Less than 5% deviation
TIF.	Less than 50
THF.	Less than 3%

ENGINE

V-8, V-12, & V-16, Four-Stroke-Cycle Diesel, 1800 rpm	
Bore - mm (in).	170 (6.7)
Stroke - mm (in).	190 (7.5)
Displacement - L (cu in).	27.03 L (1958.9 in ³)
V-8.	34.5 (2105)
V-12.	51.8 (3158)
V-16.	69.0 (4210)
Aspiration	Turbocharged-Aftercooled

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TECHNICAL DATA

XQ1250			XQ900	XQ1250	XQ1750	
Rating Information	Engine 60 Hz – 1800 rpm		3508	3512	3516	
	Prime power rating (w/10% overload) @ 0.8PF with fan	kW	900	1250	1750	
	Voltage		480	480	480	
	Aspiration		TA	TA	TA	
Physical Factors – Package with undercarriage	Length	cm	1219	1219	1219	
		in	480	480	480	
	Width	cm	234	234	234	
		in	92	92	92	
	Height	cm	410	411	411	
	in	150	162	162		
Shipping weight	kg	24 000	25 600	28.700		
	lb	53 000	56 500	63 500		
Lubrication & Cooling Systems	Engine lubricating oil capacity	L	250	348	348	
		qts	264	368	368	
	Engine coolant capacity w/radiator (with 50% glycol)	L	285	318	318	
	gal	75	84	84		
Engine Performance Data @ Rated Conditions	Fuel tank capacity	L	4738	4738	4738	
		gal	1250	1250	1250	
	Fuel consumption prime (100% load) w/fan per ISO 3046/1 +55, -0% tolerance	L/Hr	255.9	333.6	504.7	
		gph	67.6	88.2	133.4	
	Fuel consumption (75% load) w/fan	L/Hr	195.6	248.2	378.1	
		gph	51.7	65.6	99.9	
	Fuel consumption (75% load) w/fan	L/Hr	134.0	175.0	264.6	
		gph	35.4	46.3	69.9	
	Deration:					
	Altitude – 3.0% per 305m (1000 ft) above	m	900	1225	1375	
	ft	2958	4019	4510		
Temperature – 1.9% per 5.5° C (10° F) above	° C	55	55	55		
	° F	131	131	131		
at sea level or degree above standard ambient at altitude above 760 m (2500 ft).						
Sound level – Prime +10% @ 16 m (50 ft) Log Average 4 pt.	dbA	68	69	70		
40 ft	L		H		W	
	cm	in	cm	in	cm	in
	1219	480	290	114	234	92

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FEATURES

CAT® GENERATOR SETS

- Factory designed, certified prototype tested with torsional analysis. Production tested and delivered to you in a package that is ready to be connected to your fuel and power lines. Supported 100% by your Caterpillar dealer with warranty on parts and labor; extended warranty available in some areas.

RELIABLE, FUEL EFFICIENT DIESEL

- The compact, four-stroke-cycle diesel engine combines durability with minimum weight while providing dependability and economy. The fuel system operates on a variety of fuels.

THE CATERPILLAR® GENERATOR

- Single bearing, wye connected six lead permanent magnet excited, static regulated, brushless generator designed to match the performance and output characteristics of the Caterpillar diesel engine that drives it.

EXCLUSIVE CATERPILLAR® VOLTAGE REGULATOR

- Three-phase sensing and Volts-per-Hertz regulation with excellent block loading and constant voltage in the normal operating range.

CATERPILLAR® COOLING SYSTEM

- Three-phase sensing and Volts-per-Hertz regulation with excellent block loading and constant voltage in the normal operating range.

ISO 9001 QUALITY SYSTEM STANDARD

- Generator set designed and manufactured in conformance with ISO 9001 Quality System Standard; and generator set and components meet or exceed the following specifications: AS1359, AS2789, ABGSM TM3, BS4999, DIN6271, DIN6280, EGSA101P, JEM1359, IEC 34/1, ISO3046/1, ISO DIS 8528, NEMA MG1-22, 89/392 EEC

CATERPILLAR® SWITCHGEAR

- EMCP II based, semiautomatic paralleling components. Circuit breakers, bus bars, and connection panel ready to connect.

PLUG & PEAK SHAVE UTILITY

CONVERSION PANELS (OPTIONAL)

- The addition of the conversion panels will allow automatic or manual paralleling with a utility power source as a load management system with provisions for standby operation feeding an isolated load network. Easily installed in a few minutes by two people using four bolts and two quick connect type connectors per panel. Includes utility protective relays, loading controls, utility metering.

SOUND ATTENUATED, ISO CONTAINER

- For ease of transportation and protection. Meets ISO/TC104, ANSI/MH5.1, and UIC Code 592-1. Meets 70 dBA at 50 ft or below per SAE J1074 measurement procedure.

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STANDARD EQUIPMENT

ENGINE

Air cleaner with service indicator
Batteries
Filters
fuel LH with service indicators
lubricating oil
Insulated muffler
Jacket water heater
Pump, fuel priming
Radiator
Service meter
Standard 8-gauge instrument panel
Sump pump

GENERATOR

SR4 brushless, 480 volt PM excited
Three-phase, with voltage regulator and space heater

CONTAINER

Side air intake louvers
Bus bar access door
Fuel tank w/gauge 40-ft, 4732 L (1250 usable gal)
Fuel/water separator
24 VDC lighting
Sound attenuated (72 dBA @ 50 ft)

SWITCHGEAR

Automatic start/stop with cycle cranking and cooldown timer
Auxiliary power connections for jacket water heater, battery charger, space heaters
Battery charger, heavy duty 20A
Circuit breaker, manually operated
Connection terminals, three-phase and neutral cooling
Standard cooling provides 105° ambient at prime rating
40-foot module, floor standing with EMCP II components
2310A Load share governor

ENCLOSURE

ISO hi cube container
Lockable doors prevent vandalism or unsafe operating conditions
Sound attenuation satisfies customer requirement for quiet rental units. Eliminates noise complaints.
Stainless steel hardware and hinges provide superior rust corrosion protection.
Vertical radiator and exhaust discharge plenum contribute to sound attenuation performance.
Directs hot air and diffuses radiator discharge and exhaust gases upward, away from bystander and package. Allows for placement of power module next to a building or other obstruction that may restrict flow to the radiator.

OPTIONAL EQUIPMENT

CONTAINER

Roof air intake louvers

SWITCHGEAR

CIM, CCM, remote annunciation
Circuit breaker, electrically operated
Meters: power factor, KVAR, WM, W/WHM, synchroscope
Paralleling: semiautomatic or fully automatic
Protective Relays: 27, 59, 40, 46, 810, 81 V

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STANDARD CONTROLS

12 m (40 ft) containers (480 V/60 Hz, 400 V/50 Hz)

Floorstanding switchgear includes the following functions and features:

Electronic Modular Control Panel (EMCP II) Components

Generator Set Control (GSC)

Monitoring

Sequentially rotating, backlit LCD display of engine hours, engine rpm, DC battery voltage, oil pressure, and water temperature. Includes pushbutton to hold display on any single parameter.

Protection

Shutdowns:

Overspeed, overcrank, high water temperature, low oil pressure, and emergency stop. With LED indicator for each condition.

Alarms:

Low coolant level

AC Metering

Three-phase volts (L-L), amperes and frequency with phase select pushbutton, on backlit LCD. Metering accuracy is 0.5%.

Control

Automatic starting with field adjustable cycle crank, failure to start (overcrank), and cooldown timer.

Programming and Diagnostics

Includes field programmable set-points for engine control and monitoring variables and self diagnosis of EMCP II system component and wiring failures.

Alarm Module

Flashing LED warnings for: low coolant temperature, high coolant temperature (pre-alarm), low oil pressure (prealarm), engine control switch not in automatic, and low DC voltage. Includes alarm horn and acknowledge pushbutton.

Engine Control Switch

Snap action rotary switch, four-position – off/reset, automatic, manual, stop/cooldown. Off/reset for engine shutdown and resetting faults, automatic remote starting by customer contact closure, manual for local starting and manual paralleling, stop/cooldown for manual operation cooldown.

Alarm Acknowledge/Lamp Test Switch

Three-position, spring return to center switch for alarm acknowledge and lamp test of all discrete indicating lamps. Lamp test shall also sound the alarm horn.

Annunciation Circuits

Upon receipt of an alarm or shutdown condition, the horn shall sound and an LED shall flash. Upon acknowledgement from alarm acknowledge/lamp test switch, the horn shall be silenced and the lamp steadied.

LED shall be extinguished when ECS is placed in the off/reset position if the alarm condition has been corrected. Circuits are recurring such that the LED shall flash and the horn sound, should another fault occur even prior to correction of the initial fault.

Emergency Stop Pushbutton

Mushroom head, twist to reset, causes engine shutdown

and tripping of the generator circuit breaker. Prevents engine starting when depressed.

Manual Paralleling

Controls consisting of reverse power relay, synchronizing lights, and switch. Reverse power condition causes tripping of the generator circuit breaker, immediate engine shutdown, flashing of indicating lamp, and sounding of alarm horn.

Circuit Breaker

Fix mounted, three-pole, manually operated, molded case circuit breaker with solid state trip unit for overload (time overcurrent) and fault (instantaneous) protection. Includes DC shunt trip coil activated on any generator set monitored fault. Circuit breaker is sized for full load capacity of the generator set at 0.8 power factor.

Load Share Governor

Electronic load sharing governor with speed adjust potentiometer, idle/rated switch, and isochronous/droop switch.

Voltage Regulator

Standard Caterpillar generator-mounted VR3 voltage regulator with voltage adjust rheostat mounted in the floor standing switchgear.

Current Transformers (3)

Five-ampere secondary with shorting terminal strips

Potential Transformers (3)

120VAC secondary with primary and secondary fuse protection, two connected to the generator side of the circuit breaker, one connected to the load side of the circuit breaker.

Bus Bars

Three-phase plus fully rated neutral bus bars with NEMA standard hole pattern for connection of customer load cables and generator cables. Bus bars are sized for full load capacity of the generator set at 0.8 power factor. Also includes ground bus, connected to the generator frame ground and container frame with holes for connection of field ground cable. Bus bars are accessible from outside of the power module via hinged, lockable cable access door.

Accessory Power

3500 Power Modules

Three 120VAC (60 Hz units) or 230VAC (50 Hz units) shore power connections for jacket water heaters, generator space heater, and battery charger.

Battery Charger

24VDC/20A battery charger with float/equalize modes and charging ammeter.

4160V or 3300V Power Modules

Similar to 480 V and 400 V units except for the following:

All bus bars are silver plated copper

Generator circuit breaker, three-pole, vacuum type, manually operated with 24VDC shunt trip. Sized for generator voltage and current ratings. Includes drawout overcurrent relay, with instantaneous setting, ANSI device 50/51.

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