

JCB ENERGY ELECTRIC POWER INDUSTRY

MADRID / SPAIN



























231 / 400 V - 50 Hz





GENERATOR GENERAL INFORMATION

GENERATOR	FREQUENCY	VOLTAGE	POWER FACTOR	SPEED	DIESEL EN	NGINE		ALTERN	IATOR		TYPE OF	GENER	ATOR OL	JTPUT		
Model	Hz	V	Cos Q	Rpm	Brand	Model	Series	Brand	Model	Series	Operation	kVA	kW	А		
								Ë			Standby	2.250,0	1.800,0	3.251,4		
JCC 2250	50	231/400	0.8	1500	Cummins	QSK60G4	QSK		JCB	450M	Prime	2.045,5	1.636,4	2.955,9		
								RGY	NGY.	111	RGY		Continuous	1.431,8	1.145,5	2.069,1

- Diesel Engines with Advanced Technology and Quality
- Alternators with Advanced Technology and Quality
- Low Exhaust Emission
- Control Panel Suitable for Flexible Application
- Patented Compact Designed and Sound proof Canopy
- Low Operating Cost, Suitable for Heavy-Duty
- Durability, Low Noise Level

- Tropical 50 °C Radiator, First Class Product Support
- Fuel Filter with Water and Particle Separator
- Low Fuel Consumption, Low Oil Consumption
- Global Technical Service and Maintenance Support
- Wide Range of Affordable Spare Parts
- High Quality and Reliable Technology
- Half Century Experience in Generator Manufacturing

STAND BY POWER RATING - (ESP):

ESP is applicable for supplying emergency power for the duration of the utility power outage. No overload capability is available for this rating. Under no condition is an engine allowed to operate in parallel with the public utility at the Stand by Power rating. This rating should be applied where reliable utility power is available. A Stand By rated engine should be sized for a maximum of an 70% average load factor and 200 hours of operation per year. This includes less than 25 hours per year at the Stand by Power rating. Stand By ratings should never be applied except in true emergency power outages. Negotiated power outages contracted with a utility company are not considered an emergency.

PRIME POWER RATING - (PRP):

Applicable for supplying electric power in lieu of commercially purchased power. Prime Power applications must be in the form of one of the following two categories:

UNLIMITED TIME RUNNING PRIME POWER (ULTP):

PRP (Prime Power) is available for an unlimited number of hours per year in a variable load application. Variable load should not exceed a 70% average of the Prime Power rating during any operating period of 250 hours. The total operating time at 100% Prime Power shall not exceed 500 hours per year. A 10% overload capability is available for a period of 1 hour within a 12-hour period of operation. Total operating time at the 10% overload power shall not exceed 25 hours per year.

LIMITED TIME RUNNING PRIME POWER (LTP):

LTP (Limited Time Prime Power) is available for a limited number of hours in a no variable load application. It is intended for use in situations where power outages are contracted, such as in utility power curtailment. Engines may be operated in parallel to the public utility up to 750 hours per year at power levels never to exceed the Prime Power rating. The customer should be aware, however, that the life of any engine will be reduced by this constant high load operation. Any operation

CONTINUOUS POWER RATING (COP):

COP is the power that the engine can continue to use under the prescribed speed and the specified environment condition in the normal maintenance period stipulated in the manufacturing plant. And Continuous Power is applicable for supplying utility power at a constant 100% load for an unlimited number of hours per year. No overload capability is available for this rating.



231 / 400 V - 50 Hz



PAY ATTENTION TO THE POINTS BELOW IN PICKING AND USING THE GENERATOR

- * Generators can work on Continuous Power at 70% of Prime power value if only all maintenances are done on time with original spare parts and high-quality oils that manufacturer advice.
- * Generators should not operate below 50% of Prime Power value. In such a case, the engine will burn excessive oil and eventually have irreparable damage.
- * If your need is 1000 kVA or above, you should prefer Synchronic Systems with 2-3 generators with failure back up and simultaneous aging.
- * These points will provide advantage for you with purchasing and operating the generator.

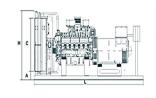
GENERATOR DIMENSIONS AND TECHNICAL DRAWINGS

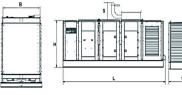


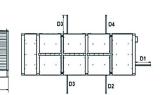


VALUES		OPEN TYPE GENERATOR	CANOPY TYPE GENERATOR	
WIDTH	mm	2600	2800	
LENGTH	mm	5700	9000	
HEIGHT	mm	2643	2900	
WEIGHT (NET)	Kg	13570	18590	
FUEL TANK CAPACITY	L	3500	3500	

SYMBOL	OPEN	CANOPY
L	5700	9000
W	2600	2800
Н	2643	2000
S		900
Α	300	
В	2559	
С	2086	
D1		1044
D2		1044
D3		1044
D4		1044
D5		1044









231 / 400 V – 50 Hz



DIESEL ENGINE MAIN TECHNICAL PARAMETERS

GENERAL		
Number of Cylinders		16
Configuration		60°Vee
Aspiration		Turbo Charged & Aftercooled
Combustion System		Direct injection
Compression Ratio		14.5:1
Bore	mm	159
Stroke	mm	190
Displacement	L	60,2
Governing Type	_	Electronic
Governing Class		G3
Rotation		Counterclockwise
Firing Order		1L,1R, 3L,3R,7L,7R,5L,5R, 8L,8R,6L,6R,2L,2R,4L,4R
Emission		Non-Regulated
FILTERS		Non regulated
Air Filter		Dry Type, Replaceable
Fuel Filter		With Water Separator
Oil Filter		Element Type, Particulate Trap
LUBRICATION SYSTEM		Element Type, Furticulate Trup
Total System	L	280
Minimum Oil Level	L	240
Nominal Motor Operating Temperature	ōC F	50
Lubricating Oil Pressure (Rated Speed)	bar	5,3
Relief Valve Opens	kPa	200-250
Oil / Fuel Consumption Ratio	%	<0,1
Normal Oil Temperature	ēC √o	120
FUEL CONSUMPTION	, and the second	120
Standby - Load 110%	L/h	431,99
Prime - Load 100%	L/h	390,69
Prime - Load 75%	L/h	289,98
Prime - Load %50	L/h	198,38
COOLING SYSTEM	•	,
Radiator Type	50ºC	Tropical
Total Coolant Capacity	L	500
Max. Perm. Coolant Outlet Temperature	ōC	110
Max. Perm. Flow Resist. (Cool. System And Piping)	bar	0,5
Max. Temperature of Coolant Warning	ōC	95
Max. Temperature of Coolant Shutdown	ōC	98
Thermostat Operation Temperature - Initial Open	ōC	76
Thermostat Operation Temperature - Full Open	ōC	85
Delivery of Coolant Pump	m³/ h	24,60
Min. Pressure Before Coolant Pump	bar	0,5
Radiator Face Area	m ²	5,82
Rows	Row	9
Matrix Density	Per / Inch	10
Material	- ,	Aluminum
Width of Matrix	mm	2480
Height of Matrix	mm	2800
Height of Matrix Pressure Cap Setting	mm kPa	2800 90
Height of Matrix Pressure Cap Setting Estimated Cooling Air Flow Reserve	mm kPa kPa	2800 90 0,125



231 / 400 V – 50 Hz



DIESEL ENGINE MAIN TECHNICAL PARAMETERS

ELECTRICAL SYSTEM		
Voltage	V	24
Starter	kW	2X9
Alternator Output Ampere	Α	35
Alternator Output Voltage	V	28
Batteries Capacity	Ah	4x143
FAN		
Diameter	mm	1900
Drive Ratio		0.85:1
Number of Blades		12
Material		Aluminum
Туре		Blowing

DIESEL ENGINE MATCHING PARAMETERS - 50 HZ

50 HZ @ 1500 R/MIN		STAND BY	PRIME	
Gross Engine Power	kW	1915,0	1740,9	
Net Engine Power	kW	1861,0	1691,8	
Fan Power Consumption (Belt Pulley Driven)	kW	44,0	44,0	
Other Power Loss	kW	10,0	10,0	
Mean Effective Pressure	MPa	2544,00	2544,00	
Intake Air Flow	m³/min	144,00	144,00	
Exhaust Temperature Limit	ōС	450	450	
Exhaust Flow	m ³/ min	336,00	336,00	
Boost Pressure Ratio		175,00	175,00	
Mean Piston Speed	m / s	9,5	9,5	
Cooling Fan Air Flow	m ³/ min	2374,0	2374,0	
Typical Generator Output Power	kVA	2256	2051	
Alternator Efficiency	%	97,0	97,0	
HEAT REJECTION		STAND BY	PRIME	
Energy in Fuel (Heat of Combustion)	kW	4280,0	4280,0	
Gross Heat to Power	kW	1915,0	1915,0	
Energy to Coolant and Lubricating Oil	kW	780,0	780,0	
Energy to Exhaust	kW	1410,0	1410,0	
Heat to Radiation	kW	175,00	175,00	



231 / 400 V – 50 Hz



ALTERNATOR SPECIFICATIONS



ALTERNATOR TECHNICA	L PARAMETERS				
Insulation Class		Н	Field Control System		Self-Excited
Winding Pitch		2/3 - (N° 6)	A.V.R. Model	Standard	MX321+PMG
Wires		6	Voltage Regulation	%	± 0.5
Protection		IP 23	Sustained Short-Circuit Current	10 sec	300% (3 IN)
Altitude	m	1000	Total Harmonic (*) TGH / THC	%	< 4
Overspeed	rpm	2250	Wave Form: NEMA = TIF - (*)		< 50
Air Flow	m³/sec.	2,69	Wave Form: I.E.C. = THF - (*)	%	< 1.5
Bearing Drive	N/A	-	Bearing Non-Drive	Bearing	6319-2RZ
Rotor Winding	100%	Copper	Stator Winding	100%	Copper

50 HZ / 231-400V COSQ 0,8 / 1500 RPM									
STANDARD USING ALTERNATOR				OPTIONAL USING ALTERNATOR					
BRAND/MODEL	JCBENERGY	JCB 450M		LEROY-SO	OMER [™]	LSA 52.3S6	STAMFORD	P7F	
DUTY				Continuous				Stand By	
AMBIENT	C°			40°C				27°C	
CLASS / TEMP. RISE	C°			H/ 125° K				H/ 163° K	
SERIES STAR	V	380/220	400/231	415/240	1 Phase	380/220	400/231	415/240	1 Phase
PARALLEL STAR	V	190/110	200/115	208/120	220	190/110	200/115	208/120	220
SERIES DELTA	V	220	230	240	230	220	230	240	230
OUTPUT POWER	kVA	2045,0	2045,0	2086,0	-	2250,0	2250,0	2295,0	-
OUTPUT POWER	kW	1636,0	1636,0	1668,8	-	1800,0	1800,0	1836,0	-



231 / 400 V - 50 Hz



CONTROL MODULE ALERTS

Emergency Stop Malfunction
High Generator Frequency
Low Generator frequency, Low Load
Over Current, Unbalanced Current
Low Generator Voltage
High generator Frequency
Phase sequence error
Overload, Heat Sensor Broken
Low Water Level (Optional)
Low Oil Pressure, Reverse Power

Start Error, Stop Error
Magnetic Pickup Error
Charge Alternator Error
Unbalanced Load
Maintenance Time Alarm
Low Speed, High Speed
Broken Oil Sensor Cable
High Oil Temperature (Optional)
Low Fuel Level (Optional), High Battery Voltage
Low Battery Voltage, High Water Temperature
Electronic Can bus Errors (ECU)

CONTROL PANEL SPECIFICATIONS



Low Water Temperature



- Powder Painted Steel Panel with Lockable Door
- ATS (Automatic Transfer Panel)-Optional
- Control Module
- Battery Charger
- Emergency Stop Button

- Terminal Blocks
- o Load Output Terminal
- System Protection MSBs
- Circuit Breaker-Optional
- LCD Screen
- Control Relays
- Backlit, 128x64 Pixels

CONTROL MODULE TECHNICAL PARAMETERS

Brand	JCBENERGY	Brand	Trans-MIDIAMF.232.GP
Dimensions	120mmx94mm.	Protection Class	IP65 From the Front
Weight	260 gr.	Environmental Conditions	2000 meters above sea level
Ambient Humidity	Max. %90.	Ambient Temperature	-20°C to +70°C
DC Battery Supply Voltage	8 - 32 V	Battery Voltage Measurement	8 – 32 V
Network Frequency	5 - 99,9 Hz	Mains Voltage Measurement	3 - 300 V phase -Neutral, 5 - 99,9 Hz
Generator Voltage Measurement	3 - 300 V	Generator Frequency	5 - 99,9 Hz
Current Transformer Secondary	5A	Working Period	Continuous
Charge Alternator Voltage Measurement	8 - 32 V	Charge Alternator Excitation	210mA &12V, 105mA &24V Nominal 2.5W
Communication Interface	RS-232	Analog Sender Measurement	0 - 1300ohm
Generator Contactor Relay Output	5A & 250V	Mains Contactor Relay Output	5A & 250V
Solenoid Transistor Outputs	1A with DC Supply	Start Transistor Outputs	1A with DC Supply
Configurable-3 Transistor Outputs	1A with DC Supply	Configurable-4 Transistor Outputs	1A with DC Supply



231 / 400 V - 50 Hz



CONTROL MODULE FUNCTION

Mains Voltage Level Control	Generator Voltage Level Control	3 Phase Generator	3 Phase AMF Function	Alarm Horn
		Protections		
Network Frequency Level	Generator Frequency level	- High / Low Voltage	- High / Low Frequency	Heater Tube
Control	Control			Thermostat Control
Engine Operating Option Control	Generator Current Level Control	- High / Low Frequency	- High / Low Voltage	Modbus and SNMP
Engine Stop Option Control	Generator Powder Level Control	- Current / Voltage Asymmetry	- High / Low Water Temperature	Working Hour
Engine Speed (RPM) Level	Generator work Schedule and	- Overcurrent / Overload	- High / Low Load	Ground Leakage
Control	Timing Control			
Battery Voltage Options	Oil Pressure Controllers Control	Overheat Control	Mains., Generator ATS	Analog Modem
Times			Control	
Check Engine Maintenance	Configurable Analog Inputs and	1 Phase or 3 Phase, Phase	Network, Voltage,	Ethernet, USB, RS232,
Times	Outputs	Selection	Frequency Display	RS485
Communication Interfaces	Keeping Error Records of Past	Parameter Setting via	Parameter Setting via	Selectable Protection
GPRS, GSM	Events	Control Module	Computer	Alarm / Shutdown
Engine Speed, Voltage,	Configurable Programmable	Water Temperature	Hours of Operation	Battery Voltage
Earning	Digital Inputs and Outputs	Current and Frequency	Phase sequence	Oil Pressure

SOUND PROOF CANOPY AND BASE FRAME (CHASIS) SPECIFICATIONS



- Special, Registered JCB Energy Design and Colour
- A1 Quality DKP / HRU / Galvanized Steel
- Sensitive Twist on Automatic Press Brake
- Delicate Cut on Automatic Punch and Laser Bench
- Sensitive Welding on Robotic Welding Bench
- Chemical Cleaning Nano Technology Before Painting
- Robotic Painting with Electrostatic Powder Paint
- o Drying and stabilizing on 200 ºC Ovens
- o 1500 Hour Salt Test
- o Glass wool Isolation, A1 Class Material -50/+500 ºC
- Special Covering Over Glass Wool
- Best Sound Level (in Dba)
- Temperature Tests
- Rustproof Accessories

- Cable Exit Connectors and Glands
- Emergency Stop Button
- Fuel Level Gauge
- Fuel Drain Cap
- Fuel Inlet and Return Records
- I permeability Test for Fuel Tank
- Vacuumed Rubber Mounted
- High Quality weatherstrips
- High Quality Shock Absorbers
- Fuel Filling Cap (with ventilation)
- Lifting and Carrying Equipment
- Internal Exhaust Mufflers (Silencers)
- External Exhaust Mufflers (Silencers)
- Radiator water Filling Cap
- Daily Fuel Tank, External Fuel Tank

Our Quality Certificates

