JCB ENERGY ELECTRIC POWER INDUSTRY

JCBENERGY

Transford

MADRID / SPAIN





231 / 400 V – 50 Hz & 277 / 480 V – 60 Hz





GENERATOR GENERAL INFORMATION

GENERATOR	FREQUENCY	VOLTAGE	POWER FACTOR	SPEED	DIESEL	ENGINE		ALTERN	ATOR		TYPE OF	GENER	RATOR O	UTPUT
Model	Hz	V	Cos Q	Rpm	Brand	Model	Series	Brand	Model	Series	Operation	kVA	kW	А
								Ľ			Standby	300,0	240,0	433,5
JCN 300	50	231/400	0.8	1500		C371JCI	CII	CBENERGY	JCB	270LX	Prime	272,7	218,2	394,1
											Continuous	190,9	152,7	275,9
					JCN						Standby	300,0	240,0	433,5
JCN 300	60	277/480	0.8	1800						270MX	Prime	272,2	218,2	394,1
								· ~,			Continuous	190,9	152,7	275,9
Diesel Engines with Advanced Technology and Quality						•				s Product	t Support			

Alternators with Advanced Technology and Quality
Fuel Filter with Water and Particle Separator
Low Exhaust Emission
Control Panel Suitable for Flexible Application
Global Technical Service and Maintenance Support
Wide Range of Affordable Spare Parts
Low Operating Cost, Suitable for Heavy-Duty
Durability, Low Noise Level
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.



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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.

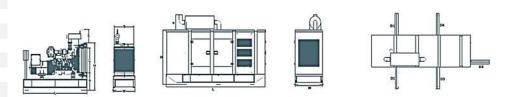
GENERATOR DIMENSIONS AND TECHNICAL DRAWINGS





VALUES		OPEN TYPE GENERATOR	CANOPY TYPE GENERATOR
WIDTH	mm	1100	1140
LENGTH	mm	3095	4100
HEIGHT	mm	1782	1900
WEIGHT (NET)	Kg	2159	2600
FUEL TANK CAPACITY	L	475	678

SYMBOL	OPEN	CANOPY
L	3095	4100
W	1100	1140
н	1598	2000
S	184	600
Α	766	
В	810	
С	860	
D1		860
D2		860
D3		860
D4		860
D5		860



FUEL CONSUMPTION

PERCENT OF PRIME POWER	1500 rpm	1800 rpm
	l/hr	l/hr
110 %	60,98	60,98
100 %	55,45	55,45
75 %	42,03	42,03
50 %	29,04	29,04



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DIESEL ENGINE MAIN TECHNICAL PARAMETERS

GENERAL		
Number of Cylinders		6
Configuration		Vertical, In Line
Aspiration		Turbocharged & Intercooled
Combustion System		Direct Injection
Compression Ratio		17:1
Bore	mm	126
Stroke	mm	130
Displacement	L	9,726
Governing Type		Electronic
Governing Class		G3
Rotation		Counterclockwise
Firing Order		1-5-3-6-2-4
Emission		Tier II
Moments of Rotation Inertia		
Engine	Kg - m²	3,02
Flywheel	Kg - m²	2,35
Performance Rating		
Speed Droop	%	≤0,5
Steady State Speed Band	%	≤0,5
FILTERS		
Air Filter		Dry Type, Replaceable
Fuel Filter		With Water Separator
Oil Filter		Element Type, Particulate Trap
FLYWHEEL HOUSING AND FLEX COUPLING		
Flywheel Housing	SAE (J620)	1
Flex Coupling Disc	Inch (")	14
TEST CONDITIONS	- ()	
Ambient Temperature	%	25
Atmospheric Pressure	КРа	100
Relative Humidity Max. Operating Intake Resistance	Rh (%)	30
	КРа	5
Exhaust Backpressure Limit	КРа	10
Exhaust Backpressure Limit Fuel Temperature (Fuel Inlet Pump)		
Exhaust Backpressure Limit Fuel Temperature (Fuel Inlet Pump) OVERALL DIMENSIONS	KPa ℃	10 38±2
Exhaust Backpressure Limit Fuel Temperature (Fuel Inlet Pump) OVERALL DIMENSIONS Length*	KPa ℃ mm	10 38±2 1854
Exhaust Backpressure Limit Fuel Temperature (Fuel Inlet Pump) OVERALL DIMENSIONS Length* Width	KPa ℃	10 38±2
Exhaust Backpressure Limit Fuel Temperature (Fuel Inlet Pump) OVERALL DIMENSIONS Length* Width Height Dry Weight	KPa ℃ mm mm	10 38±2 1854 887
Exhaust Backpressure Limit Fuel Temperature (Fuel Inlet Pump) OVERALL DIMENSIONS Length* Width Height Dry Weight *From front end of radiator to near end of air filter	KPa ℃ mm mm mm mm	10 38±2 1854 887 1209
Exhaust Backpressure Limit Fuel Temperature (Fuel Inlet Pump) OVERALL DIMENSIONS Length* Width Height Dry Weight *From front end of radiator to near end of air filter FAN	KPa °C mm mm mm kg	10 38±2 1854 887 1209 980
Exhaust Backpressure Limit Fuel Temperature (Fuel Inlet Pump) OVERALL DIMENSIONS Length* Width Height Dry Weight *From front end of radiator to near end of air filter FAN Diameter	KPa ℃ mm mm mm mm	10 38±2 1854 887 1209 980 760
Exhaust Backpressure Limit Fuel Temperature (Fuel Inlet Pump) OVERALL DIMENSIONS Length* Width Height Dry Weight *From front end of radiator to near end of air filter FAN Diameter Drive Ratio	KPa °C mm mm mm kg	10 38±2 1854 887 1209 980 980 760 1,04:1
Exhaust Backpressure Limit Fuel Temperature (Fuel Inlet Pump) OVERALL DIMENSIONS Length* Width Height Dry Weight *From front end of radiator to near end of air filter FAN Diameter	KPa °C mm mm mm kg	10 38±2 1854 887 1209 980 760



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DIESEL ENGINE MAIN TECHNICAL PARAMETERS

COOLING SYSTEM		
Radiator Type	50ºC	Tropical
Total Coolant Capacity	L	46
Max. Perm. Coolant Outlet Temperature	ōC	103
Max. Perm. Flow Resist. (Cool. System And Piping)	bar	0,5
Max. Temperature of Coolant Warning	°C	95
Max. Temperature of Coolant Shutdown	°C	98
Thermostat Operation Temperature - Initial Open	°C	68
Thermostat Operation Temperature - Full Open	°C	71
Delivery of Coolant Pump	m ³/ h	5,60
Min. Pressure Before Coolant Pump	bar	0,5
Radiator Face Area	m²	0,72
Rows	Row	5
Matrix Density	Per / Inch	15,5
Material		Aluminum
Width of Matrix	mm	830
Height of Matrix	mm	870
Pressure Cap Setting	kPa	90
Estimated Cooling Air Flow Reserve	kPa	0,125
Engine Pre Heater-Tube (with Circulation Pump)	W	3000
LUBRICATION SYSTEM		
Total System	L	26
Minimum Oil Level	L	24
Nominal Motor Operating Temperature	ōC	40
Lubricating Oil Pressure (Rated Speed)	bar	5
Relief Valve Opens	kPa	300-400
Oil / Fuel Consumption Ratio	%	≤0,36
Normal Oil Temperature	₅C	105
ELECTRICAL SYSTEM		
Voltage	V	24
Starter	kW	8,5
Alternator Output Ampers	А	55
Alternator Output Voltage	V	28
Batteries Capacity	Ah	2X120



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JCB ENERGY DIESEL ENGINE POWER RATINGS

ENGINE MODEL	C371JCI		ENGINE FAMILY	JC13	ENGINE SERIES	ENGINE SERIES CII	
Speed (Rpm)		TYPICAL GENERATOR OUTPUT (NET)		ENGINE POWE	R		
	Type of Operation			Gi	OSS	Net	
		kVA	kWe	KWm	Нр	kWm	Нр
1500	Stand By(Maximum)	300 ,0	240,0	267,0	358,4	258,0	346,3
	Prime	273,0	218,0	243,0	326,2	235,0	315,4
	Stand By(Maximum)	300,0	240,0	267,0	358,4	258,0	346,3
1800	Prime	273,0	218,0	243,0	326,2	235,0	315,4

DIESEL ENGINE MATCHING PARAMETERS - 50 HZ

50 HZ @ 1500 R/MIN		STAND BY	PRIME
Gross Engine Power	kW	276,0	251,0
Net Engine Power	kW	260,0	235,0
Fan Power Consumption (Belt Pulley Driven)	kW	14,0	14,0
Other Power Loss	kW	2,0	2,0
Mean Effective Pressure	MPa	2,73	2,49
Intake Air Flow	m ³ / min	13,80	13,20
Exhaust Temperature Limit	°C	650	650
Exhaust Flow	m ³/ min	40,20	36,55
Boost Pressure Ratio		3,26	3,09
Mean Piston Speed	m / s	6,5	6,5
Cooling Fan Air Flow	m ³/ min	612,0	612,0
Typical Generator Output Power	kVA	300	273
HEAT REJECTION		STAND BY	PRIME
Energy in Fuel (Heat of Combustion)	kW	703,0	639,0
Gross Heat to Power	kW	267,0	243,0
Energy to Coolant and Lubricating Oil	kW	143,0	130,0
Heat Dissipation Capacity *	kW	53,0	48,0
Energy to Exhaust	kW	209,0	190,0
Heat to Radiation	kW	32,0	29,0
*Intelse Interne also anotan			

*Intake Intercooled system



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DIESEL ENGINE MATCHING PARAMETERS - 60 HZ

60 HZ @ 1800 R/MIN		STAND BY	PRIME
Gross Engine Power	kW	276,0	251,0
Net Engine Power	kW	257,2	232,7
Fan Power Consumption (Belt Pulley Driven)	kW	16,8	16,8
Other Power Loss	kW	2,0	1,5
Mean Effective Pressure	MPa	2,41	2,19
Intake Air Flow	m ³ / min	14,63	13,98
Exhaust Temperature Limit	°C	636	594
Exhaust Flow	m ³ / min	44,97	40,82
Boost Pressure Ratio		3,30	3,20
Mean Piston Speed	m / s	7,8	7,8
Cooling Fan Air Flow	m ³ / min	612,0	612,0
Typical Generator Output Power	kVA	319	289
Typical Generator Output Power HEAT REJECTION	kVA	319 STAND BY	289 PRIME
	kVA kW		
HEAT REJECTION		STAND BY	PRIME
HEAT REJECTION Energy in Fuel (Heat of Combustion)	kW	STAND BY 703,0	PRIME 639,0
HEAT REJECTION Energy in Fuel (Heat of Combustion) Gross Heat to Power	kW kW	STAND BY 703,0 267,0	PRIME 639,0 243,0
HEAT REJECTION Energy in Fuel (Heat of Combustion) Gross Heat to Power Energy to Coolant and Lubricating Oil	kW kW kW	STAND BY 703,0 267,0 143,0	PRIME 639,0 243,0 130,0
HEAT REJECTION Energy in Fuel (Heat of Combustion) Gross Heat to Power Energy to Coolant and Lubricating Oil Heat Dissipation Capacity *	kW kW kW kW	STAND BY 703,0 267,0 143,0 53,0	PRIME 639,0 243,0 130,0 48,0

JCB ALTERNATOR TECHNICAL PARAMETERS AND SPECIFICATIONS



ALTERNATOR TECHNICA	L PARAMETERS				
Insulation Class		Н	Field Control System		Self-Excited
Winding Pitch		2/3 - (N° 6)	A.V.R. Model	Standard	AS440
Wires		12	Voltage Regulation	%	± 1
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.	0.514	Wave Form: I.E.C. = THF - (*)	%	< 2
Bearing Drive	N/A	-	Bearing Non-Drive	Bearing	6310-2RZ
Rotor Winding	100%	Copper	Stator Winding	100%	Copper



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ALTERNATOR SPECIFICATIONS

50 HZ / 231-400V COSQ 0,8 / 1500 RPM											
STANDARD USING ALTERNATOR				OPTIONAL USING ALTERNATOR							
BRAND/MODEL		JCB 270LX		LEROY-SO	OMER	TAL046E	STAMFORD	S4L1D	D		
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	273,0	273,0	283,0	-	300,0	300,0	312,0	-		
OUTPUT POWER	kW	218,4	218,4	226,4	-	240,0	240,0	249,6	-		

60 HZ / 277-480V COSQ 0,8 / 1800 RPM

STANDARD USING ALTERNATOR				OPTIONAL USING ALTERNATOR					
BRAND/MODEL	JEBENERGY	JCB 270MX	(LEROY-SOMER TAL046C			STAMFO	UC274J	
DUTY				Continuous				Stand By	
AMBIENT	C°			40°C				27°C	
CLASS / TEMP. RISE	C°			H / 125° K				H / 163° K	
SERIES STAR	V	416/240	440/254	480/277	1 Phase	416/240	440/254	480/277	1 Phase
PARALLEL STAR	V	208/120	220/127	240/138	-	208/120	220/127	240/138	-
SERIES DELTA	V	240	254	277	240	240	254	277	240
OUTPUT POWER	kVA	269,0	284,0	298,0	-	296,0	312,0	328,0	-
OUTPUT POWER	kW	215,2	227,2	238,4	-	236,8	249,6	262,4	-



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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 Low Water Temperature

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



• Powder Painted Steel Panel with Lockable Door

- ATS (Automatic Transfer Pane Optional
- o Control Module
- o Battery Charger
- Emergency Stop Button

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

CONTROL MODULE TECHNICAL PARAMETERS

Brand	JEBENERGY	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	



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CONTROL MODULE FUNCTION

Mains Voltage Level Control	Generator Voltage Level Control	3 Phase Generator Protections	3 Phase AMF Function	Alarm Horn
Network Frequency Level Control	Generator Frequency level Control	- High / Low Voltage	- High / Low Frequency	Heater Tube 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 Control	Generator work Schedule and Timing Control	- Overcurrent / Overload	- High / Low Load	Ground Leakage
Battery Voltage Options Times	Oil Pressure Controllers Control	Overheat Control	Mains., Generator ATS Control	Analog Modem
Check Engine Maintenance Times	Configurable Analog Inputs and Outputs	1 Phase or 3 Phase, Phase Selection	Network, Voltage, Frequency Display	Ethernet, USB, RS232, RS485
Communication Interfaces GPRS, GSM	Keeping Error Records of Past Events	Parameter Setting via Control Module	Parameter Setting via Computer	Selectable Protection Alarm / Shutdown
Engine Speed, Voltage, Earning	Configurable Programmable Digital Inputs and Outputs	Water Temperature Current and Frequency	Hours of Operation Phase sequence	Battery Voltage 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
- Drying and stabilizing on 200 ºC Ovens
- 1500 Hour Salt Test
- Glass wool Isolation, A1 Class Material -50/+500 ⁰C
- 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
- Impermeability 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
- o Daily Fuel Tank, External Fuel Tank

OUR CERTIFICATES

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