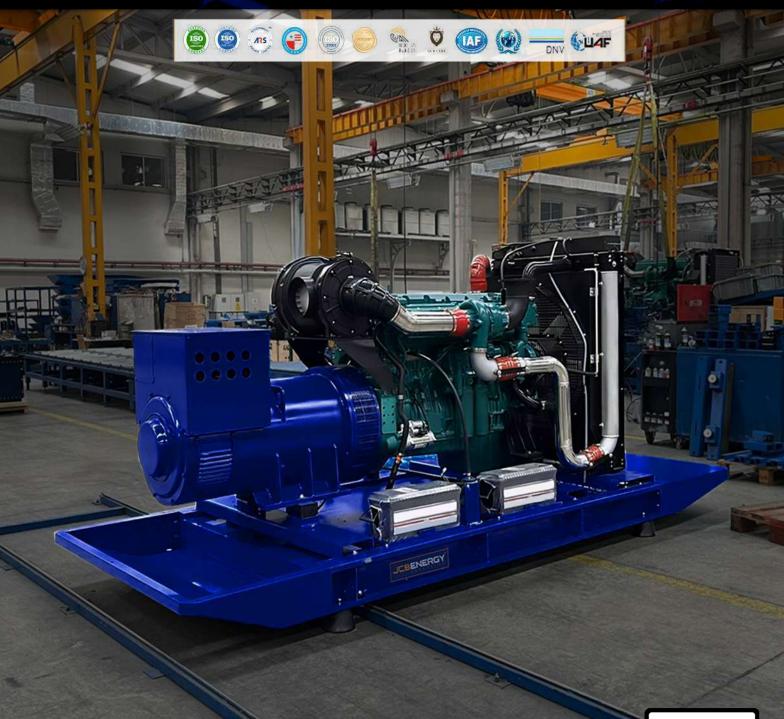


JCB ENERGY ELECTRIC POWER INDUSTRY

♀ MADRID / SPAIN







VMAN®















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





GENERATOR GENERAL INFORMATION

GENERATOR	FREQUENCY	VOLTAGE	POWER FACTOR	SPEED	DIESEL EI	NGINE		ALTERN	ATOR		TYPE OF	GENER	ATOR O	UTPUT	
Model	Hz	V	Cos Q	Rpm	Brand	Model	Series	Brand	Model	Series	Operation	kVA	kW	Α	
								<u>_</u>			Standby	55,0	44,0	79,5	
JCD 55	50	231/400	0.8	1500	À					180LXA	Prime	50,0	40,0	72,3	
					BFM3C	Λ	Λ	DEMAC	DEM 20 DE	ICB	IOULAA	Continuous	41,6	33,3	60,2
						DEUTZ BFM3C	BF	f JCB	JCB		Standby	66,0	52,8	95,4	
JCD 66	60	277/480	0.8	1800					ENERGY		180LXA	Prime	60,0	48,0	86,7
						• •	`,		Continuous	52,9	42,3	76,4			

- 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 & 277 / 480 V - 60 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.

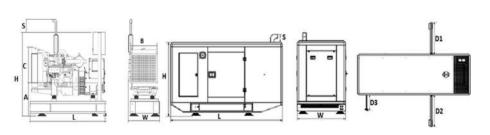
GENERATOR DIMENSIONS AND TECHNICAL DRAWINGS





VALUES		OPEN TYPE GENERATOR	CANOPY TYPE GENERATOR
WIDTH	mm	700	1002
LENGTH	mm	1700	2269
HEIGHT	mm	1562	1597
WEIGHT (NET)	Kg	857	990
FUEL TANK CAPACITY	L	134	100

SYMBOL	OPEN	CANOPY
L	1700	2269
W	700	1002
Н	1212	1392
S	350	205
Α	630	
В	600	
С	515	
D1		750
D2		750
D3		360
D4		
D5		



FUEL CONSUMPTION

PERCENT OF PRIME POWER	1500 rpm	1800 rpm
TERCENT OF TRIME TOWER	I/hr	I/hr
110 %	12,33	14,79
100 %	11,09	13,45
75 %	8,63	10,47
50 %	5,97	7,23





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



DIESEL ENGINE MAIN TECHNICAL PARAMETERS

50 Hz – 1500 min ⁻¹			60 Hz – 1800 min ⁻¹		
Туре		BFM3C	Туре		BFM3C
Speed	min ⁻¹	1500	Speed	min ⁻¹	1800
Net Frequency	Hz	50	Net Frequency	Hz	60
Power Standard		LTP	Power Standard		LTP
Power Level			Power Level		
GENERAL			GENERAL		
Aspiration		CAC	Aspiration		CAC
Governing System		Electronic	Governing System		Electronic
Governor Brand		GAC	Governor Brand		GAC
No of Cylinders		4	No of Cylinders		4
Configuration		in-line	Configuration		in-line
njection System		In-line pump	Injection System		In-line pum
Displacement	L	3,168	Displacement	L	3,168
Bore	mm	98	Bore	mm	98
Stroke	mm	105	Stroke	mm	105
	111111			111111	
Compression Ratio	_	18,5:1	Compression Ratio	_	18,5:
Mean Effective Pressure	Bar	12,6	Mean Effective Pressure	Bar	12,0
Piston Speed	m/s	5,25	Piston Speed	m/s	6,30
Rotation (looking at flywheel)		ccw	Rotation (looking at flywheel)		ccv
No of Teeth on Flywheel Ring Gear		103	No of Teeth on Flywheel Ring Gear		103
GOVERNOR PERFORMANCE			GOVERNOR PERFORMANCE		
Speed droop (static) mech. gov.	%	4-6	Speed droop (static) mech. gov.	%	4-6
Speed droop (static) electr. gov.	%	0-3	Speed droop (static) electr. gov.	%	0-3
Governing standards		G3	Governing standards		G
MOMENT OF INERTIA			MOMENT OF INERTIA		
Engine without flywheel	kg m²	5,50	Engine without flywheel	kg m²	5,50
Flywheel (standard genset spec.)	kg m²	0,2	Flywheel (standard genset spec.)	kg m²	0,3
Max. step load acceptance, 1st step	%	-	Max. step load acceptance, 1st step	%	
Sound power at full load, incl. cooling system	dB(A)	99	Sound power at full load, incl. cooling system	dB(A)	103
Sound press. (1m average, full load), incl.	4D/A)	07	Sound press. (1m average, full load), incl.	٩٥/٧)	00
cool. syst.	dB(A)	87	cool. syst.	dB(A)	90
ENGINE WEIGHT			ENGINE WEIGHT		
Engine Dry, w/o Cooling System	kg	265	Engine Dry, w/o Cooling System	Kg	265
LUBRICATION SYSTEM			LUBRICATION SYSTEM		
Oil specification		15W40/CI-4/SL	Oil specification		15W40/CI-4/SI
Oil consumption (as % of fuel consumption)	%	0.5	Oil consumption (as % of fuel consumption)	%	0,!
Oil capacity (sump)	I	7,5	Oil capacity (sump)	I	7,!
Min. oil pressure (warning)	Bar	1,5	Min. oil pressure (warning)	Bar	1,!
Min. oil pressure (shut down)	Bar	1.0	Min. oil pressure (shut down)	Bar	1,0
Max. permissible oil temperature (oil pan)	°C	120	Max. permissible oil temperature (oil pan)	°C	120
ОИТРИТ			ОИТРИТ		
Gross Output(LTP or StandBy Power)	Kw	50	Gross Output(LTP or StandBy Power)	Kw	60
Fan Reduction	Kw	3	Fan Reduction	Kw	3,0
Electrical Output (Stand By)	Kva	55	Electrical Output (Stand By)	Kva	66
Gross Output(PRP or Prime Power)	Kw	45	Gross Output(PRP or Prime Power)	Kw	55
Gross Output(Continous Power)	kw	42	Gross Output(Continous Power)	kw	50





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



DIESEL ENGINE MAIN TECHNICAL PARAMETERS

Max. perm. Flow Resistance (cool. syst. and piping) Max. perm. Flow Resistance (cool. syst. and piping) Max. Temperature of Coolant (warning) Coolant Capacity (incl. cooling unit) Max resperature at Which Thermostat Starts to open Max. Temperature at Which Thermostat Starts to open Max. Exhaust Gas Temperature Max. Exhaust Gas Temperature Max. Exhaust Gas Temperature Max. Exhaust Gas Flow (at above temp) Max. Exhaust Gas	50 Hz – 1500 min ⁻¹			60 Hz – 1800 min ⁻¹		
Max, perm. Flow Resistance (cool. syst. and piping) Max Temperature of Coolant (warning) "C 97 Max. Temperature of Coolant (shutdown) "C 103 Max. Temperature of Coolant (shutdown) "C 104 Max. Temperature of Coolant (shutdown) "C 105 Max. Temperature of Coolant (shutdown) "C 106 Max. Temperature of Coolant (shutdown) "C 107 Temperature of Which Thermostat Starts to open "C 78 Temperature at Which Thermostat Starts to open "C 78 Temperature of Coolant Pump mily Max. Permissible Coolant Pump mily Max. Coolant Capacity (shutch Temperature of Coolant Pump mily Max. Coolant Capacity (shutch Cooling unit) I	COOLING SYSTEM, GENERAL ENGINE COOLING DATA	4		COOLING SYSTEM, GENERAL ENGINE COOLING DATA	4	
Sping Spin	Max. perm. Coolant Outlet Temperature	°C	103	Max. perm. Coolant Outlet Temperature	°C	103
Avax. Temperature of Coolant (shutdown) "C 103 Max. Temperature of Coolant (shutdown) "C 103 Max. Temperature at Which Thermostat Starts to open "C 78 Temperature at Which Thermostat Starts to open "C 90 Temperature at Which Thermostat is Fully Open "C 90 Temperature at Which Thermostat is Fully Open "C 90 Delivery of Coolant Pump M³/h 4,2 Delivery of Coolant Pump M³/h 4,8 Delivery of Coolant Pump M³/h 4,8	Max. perm. Flow Resistance (cool. syst. and piping)	Bar	0.5		Bar	0.5
Temperature at Which Thermostat Starts to open C 78 Temperature at Which Thermostat Starts to open C 78 Temperature at Which Thermostat is Fully Open C 90 Temperature at Which Thermostate is Fully Open C 90 Temperature at Which Thermostate in Min. Person Colon	Max. Temperature of Coolant (warning)	°C	97	Max. Temperature of Coolant (warning)	°C	97
Temperature at Which Thermostat is Fully Open C 90 Temperature in P 90 Temperature at Which Thermostat is Fully Open C 90 Temperature in P 90 Temperature at Which Thermostat is Fully Open C 90 Temperature at Which Thermostat is Fully Open C 90 Temperature at Which Thermostat is Fully Open C 90 Temperature at Which Thermostat is Fully Open C 90 Temperature at Which Thermostat is Fully Open C 90 Temperature at Which Thermostat is Fully Open C 90 Temperature at Which Thermostat is Fully Open C 90 Temperature at Which Thermostat is Fully Open C 90 Temperature at Which Thermostat is Fully Open C 90 Temperature at Which Thermostat is Fully Open C 90 Temperature at Which Thermostat is Fully Open C 90 Temperature at Which Thermostat is Fully Open C 90 Temperature at Which Thermostat is Fully Open C 90 Temperature at Which Thermostat is Fully Open C 90 Temperature at Which Thermostat is Fully Open C 90 Temperature at Which Thermostat is Fully Open C 90 Temperature at Which Thermostat is Fully Open C 90 Temperature at Which Thermostat is Fully Open C 90 Temperature at Wh	Max. Temperature of Coolant (shutdown)	°C	103	Max. Temperature of Coolant (shutdown)	°C	103
Delivery of Coolant Pump m³/h 4,2 Delivery of Coolant Capacity (engine) m³/h 4,8 Delivery of Coolant Capacity (engine) m³/h 4,8 Delivery (engine) m³/h 5,6 Delivery (engine) m³/h 4,8 Delivery (engine) m³/h 5,6 Delivery (engine) m³/h 4,8 Delivery (engine) m³/h 6,0 Delivery (engine) m³/h 2,0 Delive	Temperature at Which Thermostat Starts to open	°C	78	Temperature at Which Thermostat Starts to open	°C	78
Min. Pressure Before Coolant Pump Bar 0.15 Min. Pressure Before Coolant Capacity (engine) Bar 0.15 Min. Pressure Before Coolant Capacity (engine) Bar 0.15 Min. Pressure Coolant Capacity (engine) Bar 0.15 Min. Pressure Loss, external Bar 0.15 Min	Temperature at Which Thermostat is Fully Open	°C	90	Temperature at Which Thermostat is Fully Open	°C	90
ENGINE COOLING SYSTEM Coolant Capacity (engine) I 4.8 Coolant Capacity (engine) I 4.8 Coolant Capacity (incl. cooling unit) I - Fan Power Consumption kW 3 Fan Power Consumption kW 4A Air to Boil (max. permissible cool. air temp. at an	Delivery of Coolant Pump	m³/h	4,2	Delivery of Coolant Pump	m³/h	4,2
Coolant Capacity (engine) I 4.8 Coolant Capacity (engine) I - Coolant Capacity (incl. cooling unit) I - Coolant Capacity (incl. cooling in them. at the pressible cool. air temp. at the pressible cool. air tem	Min. Pressure Before Coolant Pump	Bar	0.15	Min. Pressure Before Coolant Pump	Bar	0.15
Coolant Capacity (incl. cooling unit) I - Coolant Capacity (incl. cooling air Flow Interpreted and the pressure Loos, external Interposition (interpreted and interpreted and interpr			4.0			4.0
Fan Power Consumption kW 3 Fan Power Consumption kW 4 Air to Boil (max. permissible cool. air temp. at an) Air pressure Loss, external mbar 1,5 Air Pressure Loss, external mbar 2.0 Cooling air Flow m³/h 4680 Cooling air Flow m³/h 5760 HEAT BALANCE HEAT BALANCE Heat Dissipation (engine radiator) kW 42 Heat Dissipation (engine radiator) kW 45 Heat Dissipation (CAC) kW 8,5 Heat Dissipation (CAC) kW 9,1 NLET / EXHAUST DATA Max. intake Depression (Switch setting) mbar 30 Max. intake Depression (Switch setting) mbar 30 Combustion Air Volume m³/h 170 Combustion Air Volume m³/h 230 Max. Exhaust Back Pressure mbar 100 Max. Exhaust Back Pressure mbar 100 Max. Exhaust Gas Temperature °C 560 Max. Exhaust Gas Temperature °C 560 Exhaust Gas Flow (at above temp) m³/h 330 Exhaust Gas Flow (at above temp) m³/h 450 ELECTRICAL SYSTEM Voltage V 12 Voltage V 12 Voltage V 55 Alternator Output A 55 Alternator Output A 55		-		· · · · · ·	•	4.8
Air to Boil (max. permissible cool. air temp. at an) Air Pressure Loss, external mbar 1,5 Air Pressure Loss, external mbar 1,5 Air Pressure Loss, external mbar 2.0 Cooling air Flow M³/h 4680 Cooling air Flow HEAT BALANCE Heat Dissipation (engine radiator) kW 42 Heat Dissipation (engine radiator) kW 45 Heat Dissipation (CAC) kW 8,5 Heat Dissipation (CAC) kW 9,1 NLET / EXHAUST DATA INLET / EXHAUST DATA Max. intake Depression (Switch setting) mbar 30 Max. intake Depression (Switch setting) mbar 30 Max. Exhaust Back Pressure mbar 100 Max. Exhaust Back Pressure mbar 100 Max. Exhaust Gas Temperature Contact Set Set Set Set Set Set Set Set Set Se	Coolant Capacity (Incl. cooling unit)	l	-	Coolant Capacity (Incl. cooling unit)	ı	-
Air Pressure Loss, external mbar 1,5 Air Pressure Loss, external mbar 2.0 Cooling air Flow m³/h 4680 Cooling air Flow m³/h 5760 HEAT BALANCE Heat Dissipation (engine radiator) kW 42 Heat Dissipation (engine radiator) kW 45 Heat Dissipation (CAC) kW 8,5 Heat Dissipation (CAC) kW 9,1 NLET / EXHAUST DATA Max. intake Depression (Switch setting) mbar 30 Max. intake Depression (Switch setting) mbar 30 Combustion Air Volume m³/h 170 Combustion Air Volume m³/h 230 Max. Exhaust Back Pressure mbar 100 Max. Exhaust Back Pressure mbar 100 Max. Exhaust Gas Temperature °C 560 Max. Exhaust Gas Temperature °C 560 Exhaust Gas Flow (at above temp) m³/h 330 Exhaust Gas Flow (at above temp) m³/h 450 ELECTRICAL SYSTEM Voltage V 12 Voltage V 12 ELECTRICAL SYSTEM Voltage V 12 Starter KW 3 Starter KW 3 Alternator Output A 55	Fan Power Consumption	kW	3	Fan Power Consumption	kW	4
Cooling air Flow m³/h 4680 Cooling air Flow m³/h 5760 HEAT BALANCE Heat Dissipation (engine radiator) kW 42 Heat Dissipation (engine radiator) kW 9,1 Heat Dissipation (CAC) kW 8,5 Heat Dissipation (CAC) kW 9,1 NLET / EXHAUST DATA NALE / EXHAUST DATA NALE / EXHAUST DATA NALE / EXHAUST Back Pressure mbar 100 Max. Exhaust Back Pressure mbar 100 Max. Exhaust Gas Temperature °C 560 Max. Exhaust Gas Temperature °C 560 Exhaust Gas Flow (at above temp) m³/h 330 Exhaust Gas Flow (at above temp) m³/h 450 ELECTRICAL SYSTEM Voltage V 12 Voltag	Air to Boil (max. permissible cool. air temp. at fan)	°C	50	·	°C	50
HEAT BALANCE Heat Dissipation (engine radiator) kW 42 Heat Dissipation (engine radiator) kW 9,1 Heat Dissipation (CAC) kW 9,1 NLET / EXHAUST DATA INLET / EXHAUST DATA Max. intake Depression (Switch setting) mbar 30 Max. intake Depression (Switch setting) mbar 30 Max. intake Depression (Switch setting) mbar 30 Combustion Air Volume m³/h 170 Combustion Air Volume m³/h 230 Max. Exhaust Back Pressure mbar 100 Max. Exhaust Back Pressure mbar 100 Max. Exhaust Gas Temperature c 560 c 560 Max. Exhaust Gas Temperature c 560 c 560 m³/h 330 c Exhaust Gas Flow (at above temp) m³/h 450 ELECTRICAL SYSTEM Voltage V 12 Voltage V 12 Voltage V 12 Voltage A 55 Alternator Output A 55	Air Pressure Loss, external	mbar	1,5	Air Pressure Loss, external	mbar	2.0
Heat Dissipation (engine radiator) kW 45 Heat Dissipation (engine radiator) kW 8,5 Heat Dissipation (CAC) kW 9,1 NLET / EXHAUST DATA NNLET / EXHAUST DATA NAX. intake Depression (Switch setting) mbar 30 Max. Exhaust Back Pressure mbar 100 Max. Exhaust Back Pressure mbar 100 Max. Exhaust Back Pressure mbar 100 Max. Exhaust Gas Temperature °C 560 Max. Exhaust Gas Temperature °C 560 Exhaust Gas Flow (at above temp) m³/h 450 ELECTRICAL SYSTEM Voltage V 12 Voltage V 12 Voltage V 12 Voltage V 12 Alternator Output A 55 Alternator Output A 55	Cooling air Flow	m³/h	4680	Cooling air Flow	m³/h	5760
Heat Dissipation (CAC) kW 8,5 Heat Dissipation (CAC) kW 9,1 NLET / EXHAUST DATA Max. intake Depression (Switch setting) mbar 30 Max. intake Depression (Switch setting) mbar 30 Combustion Air Volume m³/h 170 Combustion Air Volume m³/h 230 Max. Exhaust Back Pressure mbar 100 Max. Exhaust Back Pressure mbar 100 Max. Exhaust Gas Temperature °C 560 Max. Exhaust Gas Temperature °C 560 Exhaust Gas Flow (at above temp) m³/h 330 Exhaust Gas Flow (at above temp) m³/h 450 ELECTRICAL SYSTEM Voltage V 12 Voltage V 12 Alternator Output A 55 Alternator Output A 55	HEAT BALANCE			HEAT BALANCE		
Max. intake Depression (Switch setting) mbar 30 Max. intake Depression (Switch setting) m³/h 230 Max. Exhaust Back Pressure mbar 100 Max. Exhaust Back Pressure mbar 100 Max. Exhaust Gas Temperature °C 560 Exhaust Gas Flow (at above temp) m³/h 450 ELECTRICAL SYSTEM Voltage V 12 Voltage V 12 Voltage V 13 Starter KW 3 Starter Alternator Output A 55	Heat Dissipation (engine radiator)	kW	42	Heat Dissipation (engine radiator)	kW	45
Max. intake Depression (Switch setting) mbar 30 Max. intake Depression (Switch setting) mbar 100 Max. Exhaust Back Pressure mbar 100 Max. Exhaust Gas Temperature °C 560 Max. Exhaust Gas Flow (at above temp) m³/h 450 ELECTRICAL SYSTEM Voltage V 12 Voltage V 12 Voltage N A 55 Alternator Output A 55	Heat Dissipation (CAC)	kW	8,5	Heat Dissipation (CAC)	kW	9,1
Combustion Air Volume m³/h 170 Combustion Air Volume m³/h 230 Max. Exhaust Back Pressure mbar 100 Max. Exhaust Back Pressure mbar 100 Max. Exhaust Gas Temperature °C 560 Max. Exhaust Gas Temperature °C 560 Exhaust Gas Flow (at above temp) m³/h 330 Exhaust Gas Flow (at above temp) m³/h 450 ELECTRICAL SYSTEM Voltage V 12 Voltage V 12 Alternator Output A 55 Alternator Output A 55	INLET / EXHAUST DATA			INLET / EXHAUST DATA		
Max. Exhaust Back Pressure mbar 100 Max. Exhaust Back Pressure mbar 100 Max. Exhaust Gas Temperature °C 560 Max. Exhaust Gas Temperature °C 560 Exhaust Gas Flow (at above temp) m³/h 330 Exhaust Gas Flow (at above temp) m³/h 450 ELECTRICAL SYSTEM Voltage V 12 Voltage V 12 Starter KW 3 Starter KW 3 Alternator Output A 55	Max. intake Depression (Switch setting)	mbar	30	Max. intake Depression (Switch setting)	mbar	30
Max. Exhaust Gas Temperature °C 560 Exhaust Gas Flow (at above temp) m³/h 330 Exhaust Gas Flow (at above temp) m³/h 450 ELECTRICAL SYSTEM Voltage V 12 Voltage KW 3 Starter KW 3 Starter KW 3 Starter Alternator Output A 55	Combustion Air Volume	m³/h	170	Combustion Air Volume	m³/h	230
Exhaust Gas Flow (at above temp) m³/h 330 Exhaust Gas Flow (at above temp) m³/h 450 ELECTRICAL SYSTEM Voltage V 12 Voltage V 12 Starter KW 3 Starter KW 3 Alternator Output A 55	Max. Exhaust Back Pressure	mbar	100	Max. Exhaust Back Pressure	mbar	100
FLECTRICAL SYSTEM Voltage V 12 Voltage V 12 Starter KW 3 Starter KW 3 Starter KW 3 Starter Alternator Output A 55 Alternator Output A 55 Starter	Max. Exhaust Gas Temperature	°C	560	Max. Exhaust Gas Temperature	°C	560
Voltage V 12 Voltage V 12 Starter KW 3 Starter KW 3 Alternator Output A 55 Alternator Output A 55	Exhaust Gas Flow (at above temp)	m³/h	330	Exhaust Gas Flow (at above temp)	m³/h	450
Starter KW 3 Starter KW 3 Alternator Output A 55 Alternator Output A 55	ELECTRICAL SYSTEM			ELECTRICAL SYSTEM		
Alternator Output A 55 Alternator Output A 55	Voltage	V	12	Voltage	V	12
	Starter	KW	3	Starter	KW	3
Patteries (minimum capacity, cold start limit -5°C) Ah 1*55 Batteries (minimum capacity, cold start limit -5°C) Ah 1*55	Alternator Output	Α	55	Alternator Output	Α	55
	Batteries (minimum capacity, cold start limit -5°C)	Ah	1*55	Batteries (minimum capacity, cold start limit -5°C)	Ah	1*55





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



ALTERNATOR TECHNICAL PARAMETERS



Insulation Class			Н	Field Control S	ystem			S	elf-Excited
Winding Pitch		7	2/3 - (N° 6)	A.V.R. Model			Standard		SX460
Wires			12	Voltage Regula	ation		%		± 1
Protection			IP 23	Sustained Sho	rt-Circuit Cu	rrent	10 sec	3	00% (3 IN)
Altitude	m		1000	Total Harmoni	c (*) TGH / T	нс	%		< 5
Overspeed	rpm		2250	Wave Form: N	EMA = TIF -	(*)			< 50
Air Flow	m³/sec.		0.216	Wave Form: I	E.C. = THF -	(*)	%		< 2
Bearing Drive	N/A		-	Bearing Non-D	rive		Bearing		6309-2RZ
Rotor Winding	100%		Copper	Stator Winding	g		100%		Copper
50 HZ / 231-400V COS	50 HZ / 231-400V COSQ 0,8 / 1500 RPM								
STANDARD USING ALTI									
STANDARD USING ALT	ERNATOR			OPTIONAL U	SING ALTERN	IATOR			
BRAND/MODEL	JCBENERGY*	JCB 180LXA		LEROY-SO	n n	TAL042G	STAMFORD	S1L2-R1	./UC224C
	,	JCB 180LXA			n n			S1L2-R1 Stand By	/UC224C
BRAND/MODEL	,	JCB 180LXA		LEROY-SO	n n				./UC224C
BRAND/MODEL DUTY	JCBENERGY	JCB 180LXA		LEROY-50 Continuous	n n			Stand By	./UC224C
BRAND/MODEL DUTY AMBIENT	C _c	JCB 180LXA 380/220	400/231	LEROY-50 Continuous 40°C	n n			Stand By 27°C	/UC224C 1 Phase
BRAND/MODEL DUTY AMBIENT CLASS / TEMP. RISE	C° C°		400/231 200/115	LEROY-50 Continuous 40°C H/ 125° K	OMER"	TAL042G		Stand By 27°C H/ 163° K	
BRAND/MODEL DUTY AMBIENT CLASS / TEMP. RISE SERIES STAR	C° C° V	380/220		LEROY-50 Continuous 40°C H/ 125° K 415/240	1 Phase	TAL042G 380/220	400/231	Stand By 27°C H/ 163° K 415/240	1 Phase
BRAND/MODEL DUTY AMBIENT CLASS / TEMP. RISE SERIES STAR PARALLEL STAR	C° C° V	380/220 190/110	200/115	LEROY-50 Continuous 40°C H/ 125° K 415/240 208/120	1 Phase	380/220 190/110	400/231 200/115	Stand By 27°C H/ 163° K 415/240 208/120	1 Phase 220

60 HZ / 277-480V COSQ 0,8 / 1800 RPM									
STANDARD USING ALTERNATOR				OPTIONAL USING ALTERNATOR					
BRAND/MODEL	JCBENERGY	JCB 180LX		LEROY-SOM	ER"	TAL042G	STAMF	ORD	JC 224 D - S1L2-R
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	7 1 Phase
PARALLEL STAR	V	208/120	220/127	240/138	-	208/120	220/127	240/138	3 -
SERIES DELTA	V	240	254	277	240	240	254	277	240
OUTPUT POWER	kVA	57,0	61,0	61,0	41,0	63,0	67,0	67,0	45,0
OUTPUT POWER	kW	45,6	48,8	48,8	32,8	50,4	53,6	53,6	36,0





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

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
- o Battery Charger
- Emergency Stop Button
- Terminal Blocks

Start Error, Stop Error

- Load Output Terminal
- System Protection MSBs
- Circuit Breaker-Optional
- o 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 & 277 / 480 V - 60 Hz



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

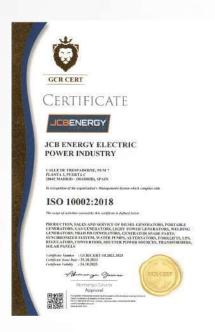


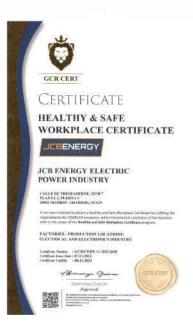
- Special, Registered JCB Energy Design and Colour
- A1 Quality DKP / HRU / Galvanized Steel
- Sensitive Twist on Automatic Press Brake
- o Delicate Cut on Automatic Punch and Laser Bench
- Sensitive Welding on Robotic Welding Bench
- Chemical Cleaning Nano Technology Before Painting
- Robotic Painting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

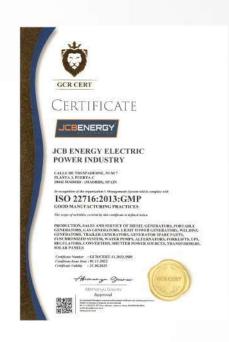
- Cable Exit Connectors and Glands
- Emergency Stop Button
- Fuel Level Gauge
- Fuel Drain Cap
- Fuel Inlet and Return Records
- Impermeability Test for Fuel Tank
- Vacuumed Rubber Mounted
- High Quality weatherstrips
- High Quality Shock Absorbers
- Fuel Filling Cap (with ventilation)
- Lifting and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



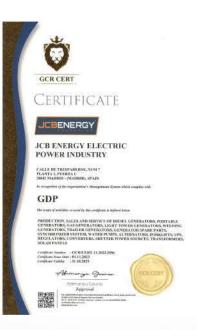
OUR CERTIFICATES

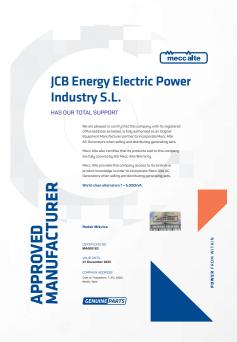






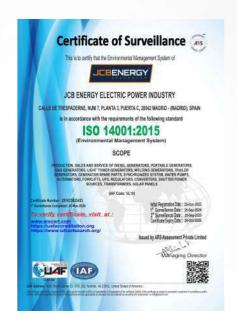






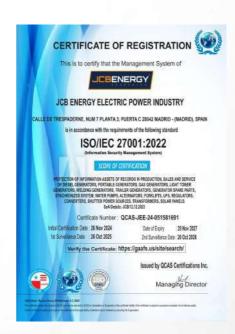














MANAGEMENT SYSTEM CERTIFICATE

Valle: 14 October 2023 – 13 October 2026

This is to certify that the management system of HD Hyundai Infracore Co., Ltd. Head Office &

Incheon Plant
489, Injung-ro, Dong-gu, Incheon, 22502, Republic of Korea
and the sites as mentioned in the appendix accompanying th

has been found to conform to the Environmental Manager ISO 14001:2015

This certificate is valid for the following scope:
Design, Development, Manufacture, Servicing of Internal Combustion Engine for use in
Marine industry, aneral Industry and Automotive Industry, and Earth Moving
Testing of Earth Moving Equipment(Excavator and Wheel Loader).

Place and date: Barendrecht, 99 October 2023

For the issuing office: DMY - Business Assurance Zwolesoweg 1, 2004 LB Barendracht, Netherlands







MANAGEMENT SYSTEM CERTIFICATE

Initial certification class: 03 January 2006 Spissed on OHSAS 18001)

HD Hyundai Infracore Co., Ltd. Head Office & Incheon Plant

480 Inlung-ro, Dong-gu, Incheon, 22502, Republic of Korea

has been found to conform to the Occupational Health and Safety Managem ISO 45001:2018

Place and date: Barendrecht, 99 October 2023

For the issuing office: DNY - Business Assurance Zwolsoweg 1, 2004 LB Barendrecht, Nethorlands











IRBNE SANKHEZ ROMANA MANNAGER DE THE DEFINENTIMENT OF LEGAL ADVISONY SERVICES AND THE DATAINSE OF THE OFFICIAL CHARMER OF COMMERCE, HICKLETRY AND SERVICES OF MADRID, WITH REGISTERED OFFICE AT PLAZA DE LA NOPER-DENICA I, MADRID, SPAIN

CERTIFY. That, according to the background data on record at this Churchar and others produced by the Company

CB ENERGY ELECTRIC POWER INCOSTRY St., a Company with Tax LD. Nation B19975554, and its registrend office at street frequency my 7, 2000-2 Making is registered on 6 May 2004, under the hearing of the 145 Section, companies, of the Economic Activities Tax Transfer Lamber 545 to preterm the following scholar:







CÉNSO DE LA CAMARA ORICIAL DE COMERCIO, INDUSTRIA Y SERVICIOS DE MADRID, CON DOMICIUO SOCIAL EN LA PLAZA DE LA INDEPENDENCIA N° 1, MADRID — ESPAÑA

CERTIFICA. Que de los antecedentes que obran en esta Corporación y da otros estábidos por la sociedad, musita:







