

KIPOR[®]

KIPOR POWER OPERATION MANUAL

PLEASE READ THIS MANUAL CAREFULLY.
IT CONTAINS IMPORTANT SAFETY INFORMATION.

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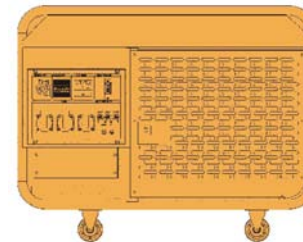
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GASOLINE GENERATOR

Single-phase:	Three-phase:
KGE12E	KGE12E3
KGE12EA	KGE12EA3
KGE13EA	KGE13EA3

PREFACE

Thank you for your purchase of our unit, our aim is to provide a high-quality generator set to achieve customer satisfaction, and we are confident that your choice will be justified.

This manual, dealing with the generator side of the unit, gives all the basic information to ensure satisfactory and reliable operation of your unit.

Please use this manual as a companion to the other manual covering the engine side.

CAUTION

1. This product is the gasoline generator set which is movable on the ground.
2. Please read the manual carefully before operation, to operate the generator after fully understanding the contents of working, check and maintenance.
3. The explosive motor is adopted in the generator, so the parts of muffler, engine and others are the high temperature parts, Failure to operate could lead to burn. Please note the warning stickers on the generator.
4. Fuel and lube oil are inflammable which close to the fire, this may touch off fire hazard or explosion. The extinguisher and first-aid kit should be set in the working field.

CAUTION

1. Use SAE 10W-30, 15W-40 (above CD grade) lubrication oil. Please replace the oil after the first 20 hrs operation. Afterwards, replace it each 50hrs.
2. Don't connect the generator to other power supplies. Such as main supply of power company. In some special cases, please connect the stand-by power to the electrical system by professional electrician who must know the difference between public supply and generator circuit.
3. For information about the engine operation and maintenance, please see our engine's manual.
4. Laymen especially the children can not realize the danger, they should keep away from the generator.
5. Please wear suitable clothes and safety protective coverall.

This book is mainly about the universal instructions for the generator set, with the continues improvement of our products, it may be slightly different from the actual products, for this we will not announce again and we hope users would take notice of that.

CONTENTS

1. Names of Main Parts and Components	1
2. Preparatory Steps for Operation	6
3. Start and Run the generator set	9
4. Stop Procedure	11
5. Lon-term Storage	12
6. Control panel Function	13
7. Periodic Maintenance and Service	15
8. Electric diagram	17
9. Appendix	24

CAUTION

Electrical equipment (including electrical lines and plugs connection) could not be defective. By the effect of mechanical stress, make sure to use the rubber sheathed flexible cable or analog.
 Limit length of electric line when using the extension line or distributed network is: less than 60m for cables of 1.5mm², and less than 100m for cables of 2.5mm²

2. Modified coefficient table of ambient condition power

The conditions of generator rated output:

Altitude: 0 m Ambient temperature: 25°C Relative humidity: 30%

Ambient modified coefficient: C (Relative humidity 30%)

Altitude (m)	Ambient temperature (°C)				
	25	30	35	40	45
0	1	0.98	0.96	0.93	0.90
500	0.93	0.91	0.89	0.87	0.84
1000	0.87	0.85	0.82	0.80	0.78
2000	0.75	0.73	0.71	0.69	0.66
3000	0.64	0.62	0.6	0.58	0.56
4000	0.54	0.52	0.5	0.48	0.46

Note: When the relative humidity is 60%, the modified coefficient is C-0.01

When the relative humidity is 80%, the modified coefficient is C-0.02

When the relative humidity is 90%, the modified coefficient is C-0.03

When the relative humidity is 100%, the modified coefficient is C-0.04

Counting example:

When the rated power of generator is $P_N = 5KW$, altitude is 1000m, ambient temperature is 35°C, relative humidity is 80%, the rated power of generator is:

$$P = P_N \times (C - 0.02) = 5 \times (0.82 - 0.02) = 4KW$$

9. APPENDIX

1. The choice of the electric cable

The choice of the electric cable depends on the allowable current of the cable and the distance between the load and the generator. And the cable section should be big enough.

If the current in the cable is bigger than the allowable current, it will become over hot and the cable will be burnt. If the cable is long and thin, the input voltage of the electric appliance will be not enough, causing that the generator doesn't start. In the following formula, you can calculate the value of the potential "e".

$$\text{Potential (v)} = \frac{1}{58} \times \frac{\text{Length}}{\text{Section area}} \times \text{Current (A)} \times \sqrt{3}$$

The relations among of the allowable current, and length, section of the Insulating cable (single core, multi-core) are as follow:

(Presume that the use voltage is 220V and the potential is below 10V.

Ambient temperature: 25 °C

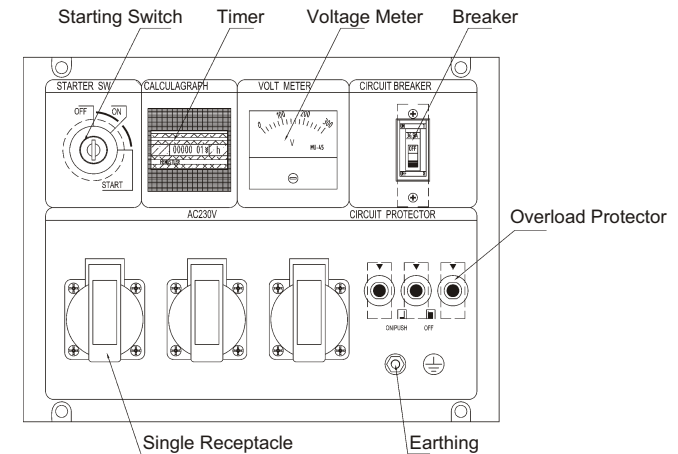
No.	Copper cables model	Single core Current capacity (25 °C)(A)		Voltage Drop mv/M	Three cores Current capacity (25 °C)(A)		Voltage Drop mv/M	Four cores Current capacity (25 °C)(A)		Voltage Drop mv/M
		VV22	YJV22		VV22	YJV22		VV22	YJV22	
1	1.5mm ²	20	25	30.86	13	18	30.86	13	13	20
2	2.5mm ²	28	35	18.9	18	22	18.9	18	30	28
3	4mm ²	38	50	11.76	24	32	11.76	25	32	38
4	6mm ²	48	60	7.86	32	41	7.86	33	42	48
5	10mm ²	65	85	4.67	45	55	4.67	47	56	65
6	16mm ²	88	110	2.95	61	75	2.6	65	80	88
7	25mm ²	113	157	1.87	85	105	1.6	86	108	113
8	35mm ²	142	192	1.35	105	130	1.2	108	130	142
9	50mm ²	171	232	1.01	124	155	0.87	137	165	171
10	70mm ²	218	294	0.71	160	205	0.61	176	220	218
11	95mm ²	265	355	0.52	201	248	0.45	217	265	265
12	120mm ²	305	410	0.43	235	292	0.36	253	310	305
13	150mm ²	355	478	0.36	275	343	0.3	290	360	355
14	185mm ²	410	550	0.3	323	400	0.25	333	415	410
15	240mm ²	490	660	0.25	381	480	0.21	400	495	490

Note: The variation of temperature and the laying of cables will influence the current capacity of cables, the table above is just used for reference.

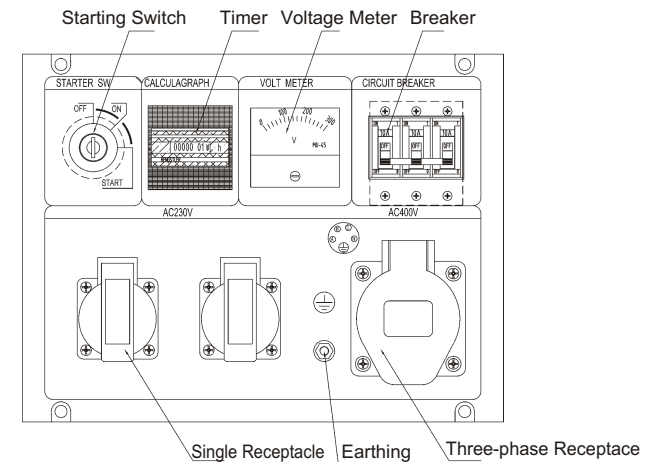
1. Names of Main Parts and Components

1. Control panel

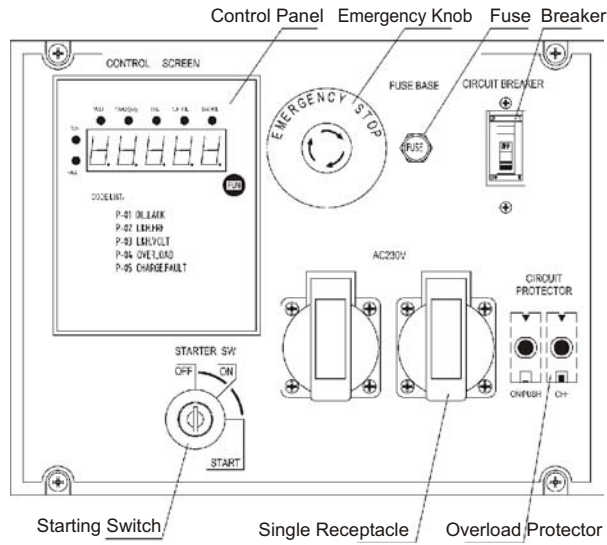
KGE12E control panel



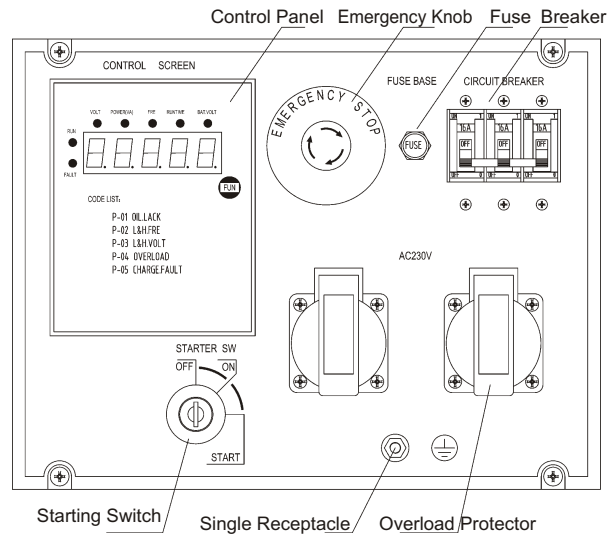
KGE12E3 control panel



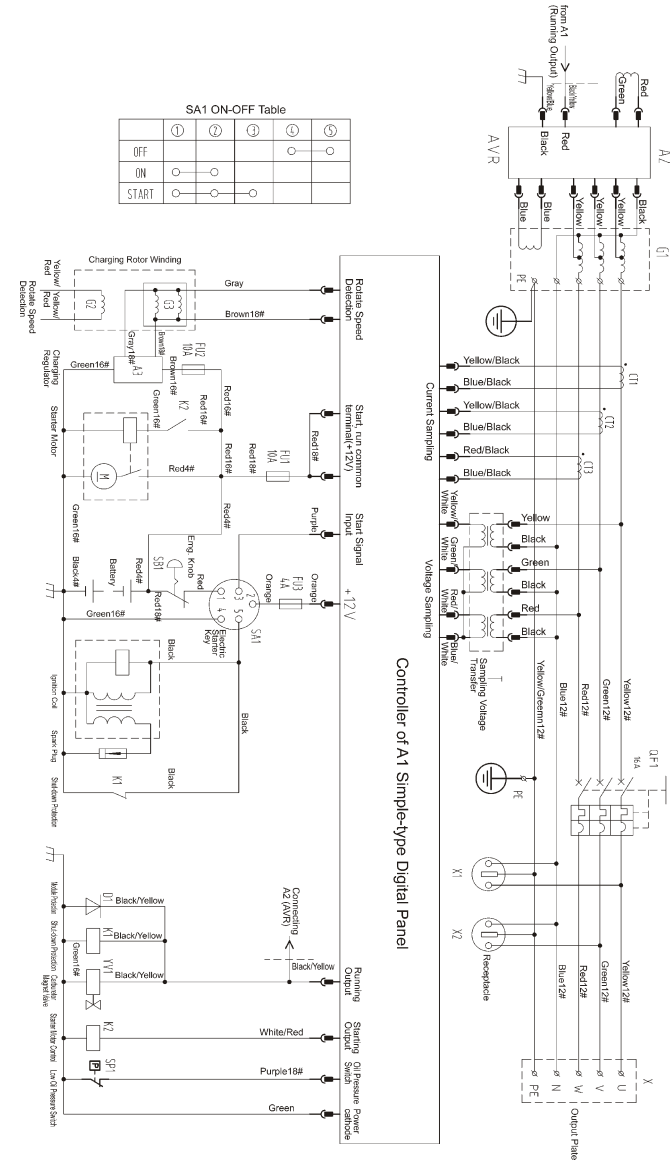
KGE12EA/KGE13EA digital control panel



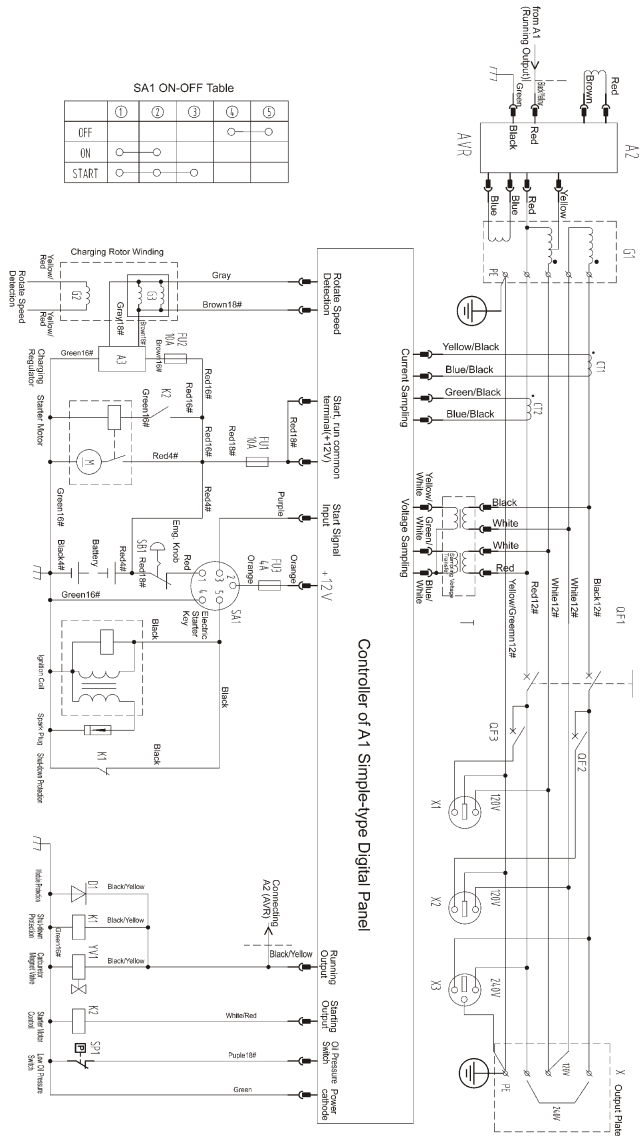
KGE12EA3/KGE13EA3 digital control panel



7. KGE12E3 ELECTRICAL WIRING DIAGRAM (Without Electric Governing)



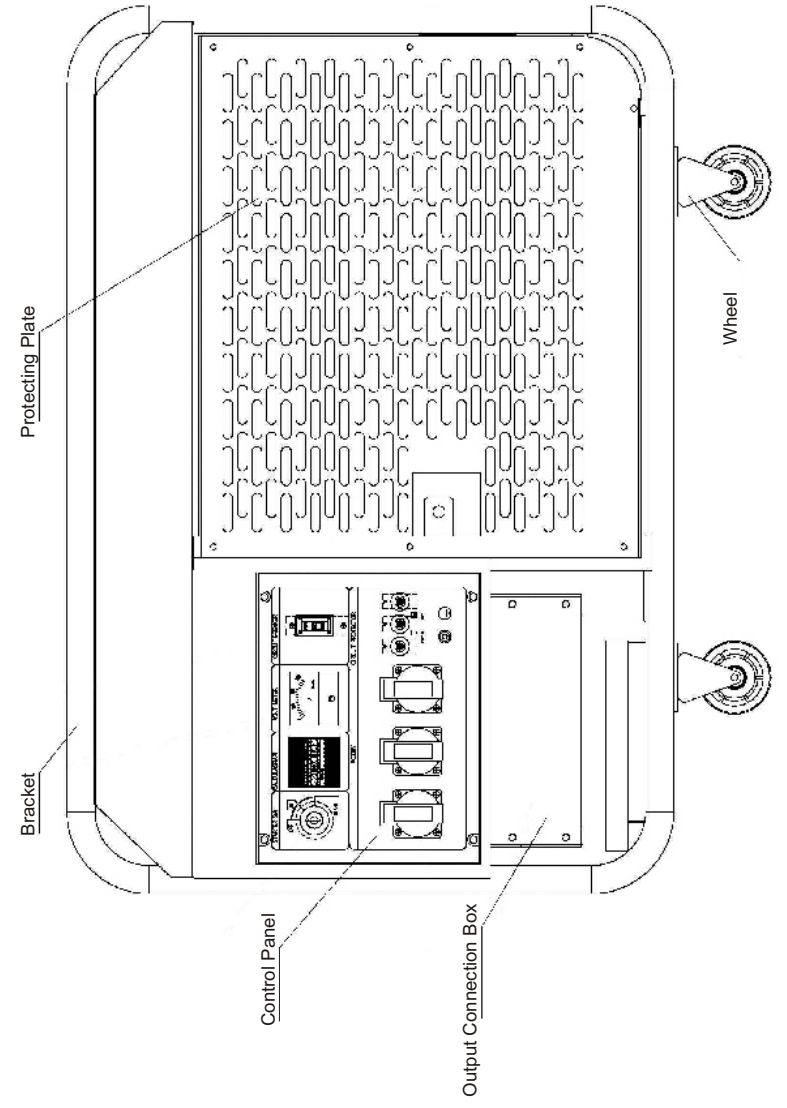
6. KGE12E3 ELECTRICAL WIRING DIAGRAM (Without Electric Governing)
(DOUBLE VOLTAGE OUTPUT)



SA1 ON-OFF Table

	①	②	③	④	⑤
OFF	○	○	○	○	○
ON	○	○	○	○	○
START	○	○	○	○	○

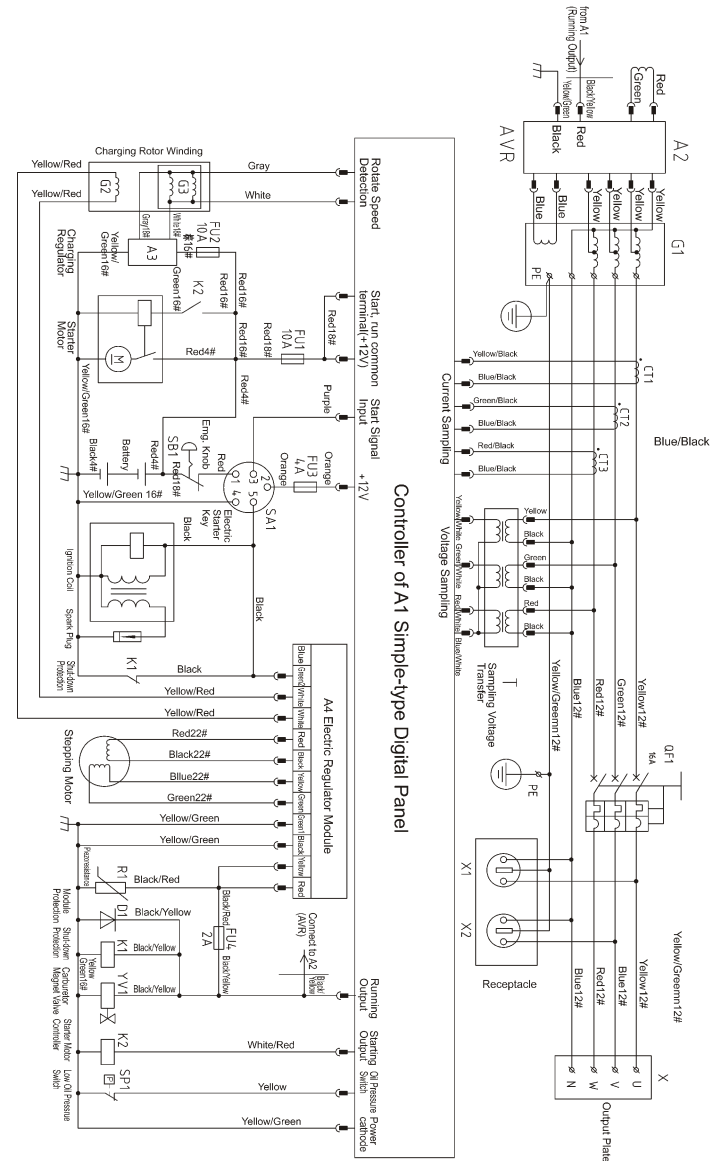
2. Outline drawing of gen-set



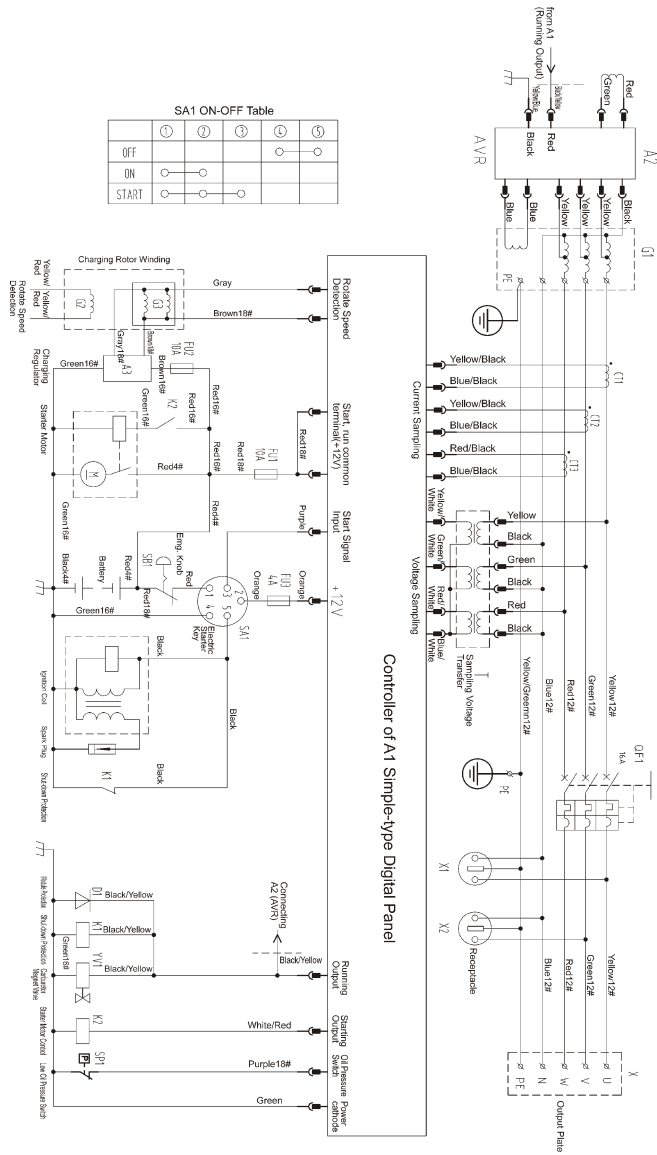
3. Main Technical Specification and Date

Model		KGE12E/EA		KGE13EA		
Generator	Rated Frequency	HZ	50	60	50	60
	Rated Power	kVA	8.5	9.5	10	11
		kW	8.5	9.5	10	11
	Max. Power	kVA	9.5	10.5	11	12
		kW	9.5	10.5	11	12
	Rated Voltage	V	115/230	120/240	115/230	120/240
Rated Current	A	73.9/36.9	79.2/39.6	87/43.5	91.7/45.8	
Rated Rotation Speed	r/min	3000	3600	3000	3600	
Generator	Alternator model	KT12		KT12		
	Pole	2		2		
	Phase	Single Phase				
	Excitation Mode	Self excitation and constant voltage (with AVR)				
	Power Factor	COS Φ	1.0		1.0	
	insulation grade	B		B		
	Engine Model	KG690		KG690		
Engine	Cylinder Type	V type, two cylinder, 4-stroke, air-cooled, OHV		V type, two cylinder, 4-stroke, air-cooled, OHV		
	Bore × Stroke	mm	78 × 72		78 × 72	
	Displacement	ml	688		688	
	Compression Ratio	8.5:1		8.5:1		
	Rated Power	kW	12	14	12	14
	Ignition Model	Inductance type (TCI)				
	Lubricating System	Pressure splash combined type				
	Lube Model	Above CD grade or SAE 10W-30、15W-40				
	Lube capacity	L	1.3		1.3	
	Starting Mode	12V electric starter		12V electric starter		
	Starter Motor capacity	V-kW	12V 1.4KW		12V 1.4KW	
	Charging generator capacity	V-A	12V 8A		12V 8A	
	Battery Capacity x qty.	V-Ah	12V 36Ah		12V 36Ah	
	Fuel type	Automotive unleaded gasoline				
	Fuel Consumption	g/kW.h	≦370		≦370	
Unit	Panel type	E:General panel/EA Digital panel		Digital panel		
	Noise Level (7m)	dB(A)	77		78	
	Structure Mode	Open frame				
	Fuel Tank Capacity	L	25		25	
	Continuous Running Time	h	5		4.5	
	Overall Dimension	mm	910 × 600 × 620		910 × 600 × 620	
	Dry Weight	kg	E: 161	EA: 168	168	

5. KGE12EA3/13EA3 ELECTRICAL WIRING DIAGRAM



4. KGE12E3 ELECTRICAL WIRING DIAGRAM (Without Electric Governing)



Model		KGE12E3/EA3		KGE13EA3		
Generator	Rated Frequency	HZ	50	60	50	60
	Rated Power	KVA	9.5	10.5	12.5	13.8
		KW	7.6	8.4	10	11
	Max. Power	KVA	10.5	11.5	13.8	15
		KW	8.4	9.2	11	12
	Rated Voltage	V	400/230	416/240	400/230	416/240
Rated Current	A	13.7	14.6	18	19.2	
Rated Rotation Speed	r/min	3000	3600	3000	3600	
Generator	Alternator model	KTS12		KTS12		
	Pole	2		2		
	Phase	Three-phase				
	Excitation Mode	Self excitation and constant voltage (with AVR)				
	Power Factor	COS Φ	0.8 (lag)		0.8 (lag)	
	insulation grade	B		B		
Engine	Engine Model	KG690		KG690		
	Cylinder Type	V type, two cylinder, 4-stroke, air-cooled, OHV		V type, two cylinder, 4-stroke, air-cooled, OHV		
	Bore × Stroke	mm	78 × 72		78 × 72	
	Displacement	ml	688		688	
	Compression Ratio	8.5:1				
	Rated Power	KW	12	14	12	14
	Ignition Model	Inductance type (TCI)				
	Lubricating System	Pressure splash combined type				
	Lube Model	Above CD grade or SAE 10W-30, 15W-40				
	Lube capacity	L	1.3		1.3	
	Starting Mode	12V electric starter		12V electric starter		
	Starter Motor capacity	V-KW	12V 1.4KW		12V 1.4KW	
	Charging generator capacity	V-A	12V 8A		12V 8A	
	Battery Capacity x qty.	V-Ah	12V 36Ah		12V 36Ah	
Fuel type	Automotive unleaded gasoline					
Fuel Consumption	g/KW.h	≤ 370		≤ 370		
Unit	Panel type	E3:General panel EA3:Digital panel		Digital panel		
	Noise Level (7m)	dB(A)		77		
	Structure Mode	Open frame				
	Fuel Tank Capacity	L	25		25	
	Continuous Running Time	h	5		4.5	
	Overall Dimension	mm	910 × 600 × 620		910 × 600 × 620	
	Dry Weight	kg		E3: 161	EA3: 168	168

2. PREPARATORY STEPS FOR OPERATION

1. Environmental Requirements

1-1 Outdoors use

- 1) Install gasoline generator in a dry and dustless place.
- 2) Avoid the direct sunshine, place gasoline Generator in shade.

1-2 Indoor use

- 1) Use in well-ventilated areas, or vent exhaust outside and away from any building air intakes. A large volume of air is required for the operation.
- 2) Keep the air inlet/outlet and the exhaust gas outlet 1.5m away from any obstacle.
- 3) Use under 40 degrees temperature.
- 4) Install Generator on a level surface.

2. Preparation for the engine

2-1 Initial start check

Check the each part of the generator before starting.

Keep away the fuel, matches, gunpowder, fuel wetting rags, hay and other inflammable and explosive goods from the generator.

Make sure that nobody near the generator is warned, before starting the gasoline generator.

Don't operate the generator set with wet hand or in rain, otherwise it will cause serious electric shock accident.

Be care of these parts in the generator, such as rotary parts, hot parts, high-voltage parts.

3. Initial start check



The rotary parts are dangerous!

The high-speed rotating parts are very dangerous when the generator is running.

■ Service the unit after its engine stops completely.

Check the following items for the initial start:

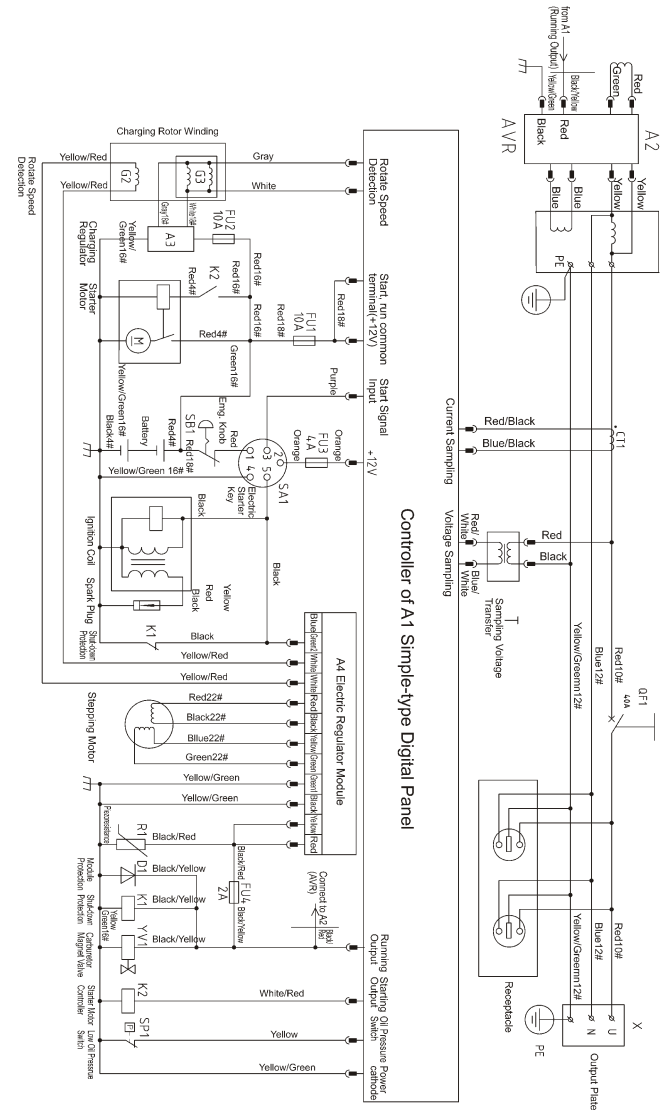
- 1) Check and refill oil

Please use the CD grade(above) or SAE 10W-30、15W-40 lubrication oil.

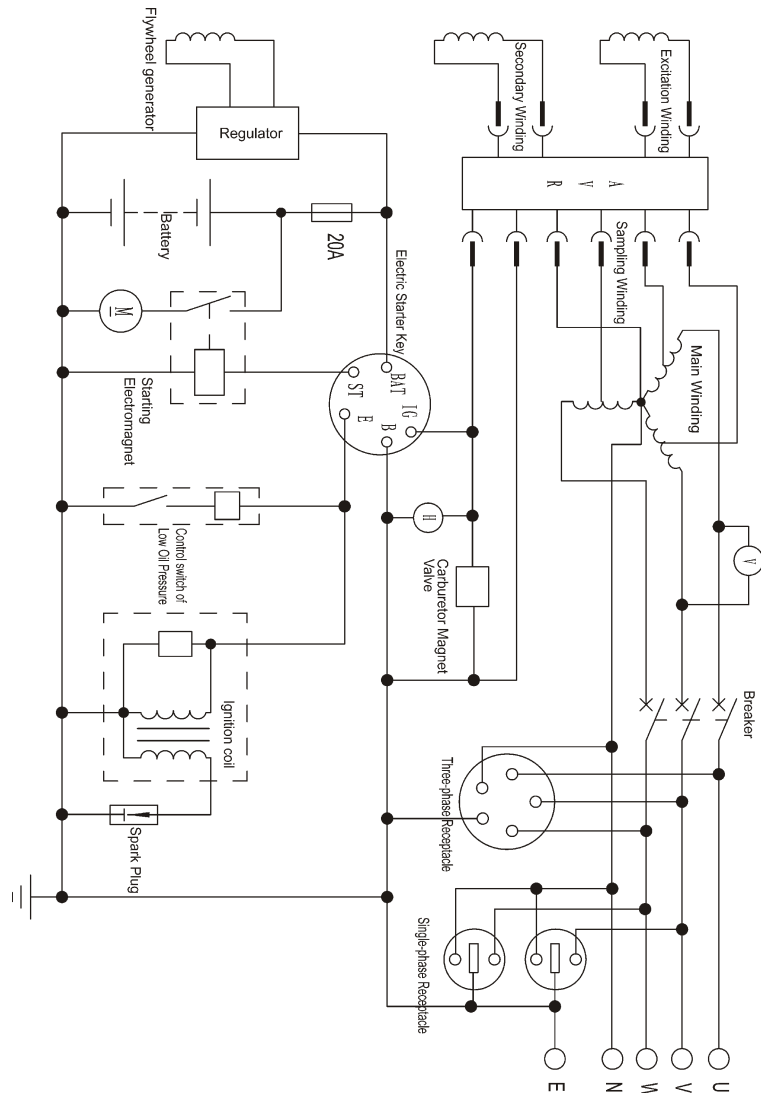


Fill the lubrication oil between the two scales, don't beyond the upper limit. If the lube spurts from the vent hole, it may cause the engine fault.

3. KGE12EA/KGE13EA ELECTRICAL WIRING DIAGRAM



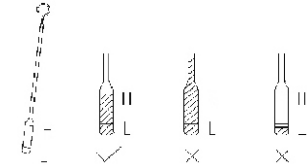
2. KGE12E3 ELECTRICAL WIRING DIAGRAM



a. The engine must be at level state when filling lube.

b. Remove the filler cover (orange), refill the recommendatory oil to the upper limit of the oil scale.

c. Measure the oil mass with oil gauge. In order to measure the accurate oil level, first pull out the oil gauge, clean it and put it in,



then pull out and look at the oil mark, at the same time check if the lube is contaminated.

d. Start and run the generator for 3-5minutes, then stop it and make sure.

2) Check and refill fuel

Open the fuel filler cover, check the fuel and refill if necessary. Fuel should be unleaded gasoline.

CAUTION

Stop the generator set before filling fuel.

Do not smoke or allow flames when refilling fuel.

Be careful not to spill fuel when refueling. If any fuel is spilled, clean it with dry cloth before starting generator.

3) Check the battery voltage

(1) Check battery

The battery of generator set adopts advanced technique without maintenance. Observe the battery indicator light when check the battery.

Blue: the electricity is enough.

Red: the electricity is not enough, need to charge.

White: replace the battery.

The crankshaft speed is lower than normal when start the engine, it may cause start failure. Then charge the battery, if can not start the generator, you should replace the battery.

The electricity is not enough; please charge the battery in time.

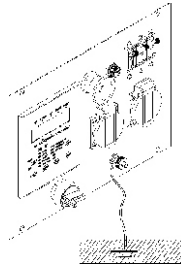
Please check the battery voltage before start the generator which has not been run for three months. Charge the battery with outer charger when the voltage below 12V. If start at low voltage, the motor may be damaged or burnt out.

(2) Notice for charging battery:

- Charge the battery in the well-ventilated place.

- First remove the cathode(-) terminal wire, then remove the anode(+) terminal wire. Connect battery anode then cathode (incorrect connection may produce spark and ignite inflammable gas in the battery thus leading to explosion.)

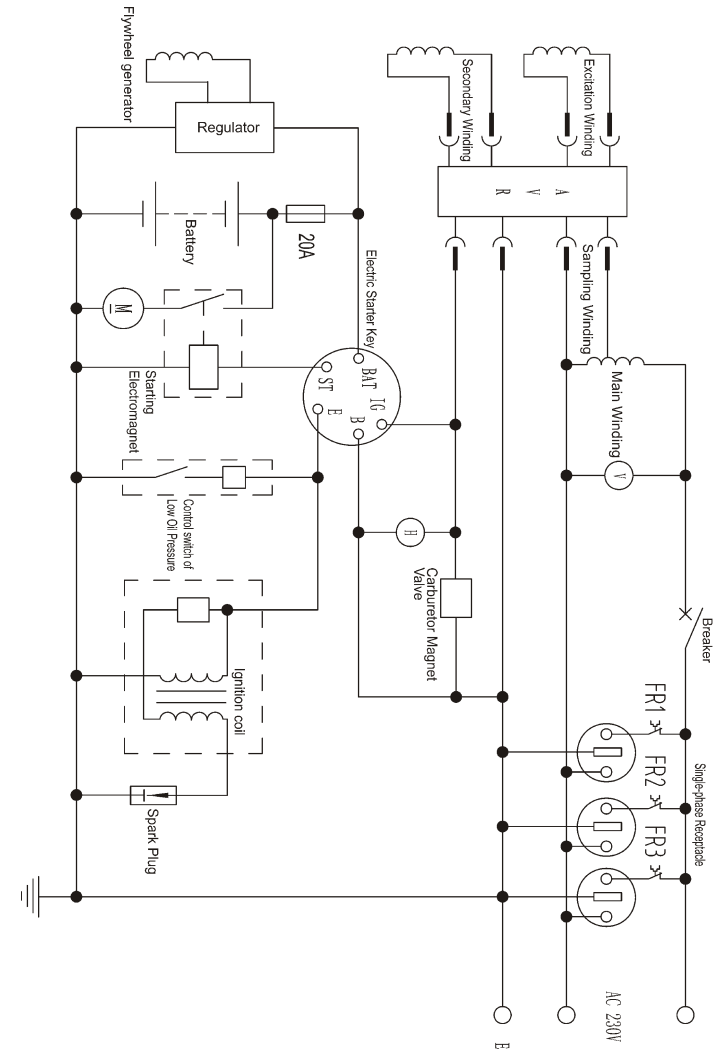
- Charge the battery in the well-ventilated place.
- If charge the battery in the badly ventilated place, there is ignition or fire risk due to inflammable gas.
- If the battery is too hot(above 45°C), recharge after stopping for a while.
 - Stop charging quickly after the battery is fully charged.
 - If connect the battery anode and cathode against, the motor may be damaged.
- 4) Check the grounding protection
The generator frame and load frame should be installed grounding protection, and make sure the grounding protection is ok.



- 5) Check fuel leakage
Inspect the wholly unit and check the fuel leakage. If fuel leak, check or contact with your dealer for service.
- 6) Check the nuts and screws for looseness
Check the nuts and screws for looseness, if loose, tighten them. Specially check the air filter, muffle and charging alternator.
Pay attention to the connection of the electric wire.
- 7) Clean the dirty and dusty in the unit
Check the inner of unit for dusty and dirty and clean it.
Check the muffle and the places near the engine for sundries and combustibles <<http://www.iciba.com/combustibles/>> and clean them.
Check the intake and outtake for clog and clean it.
- 8) Load power connection
a) Make sure the generator is matched with load capacity, in order to connect the power properly.
b) Connect output cable as per regulated wire diameter. c) The output cable as short as better, the overlong cable will cause the voltage drop. So generator should be closed to the loading center while installing.

8. ELECTRIC WIRING DIAGRAM

1. KGE12E ELECTRICAL WIRING DIAGRAM



2. Simple trouble judge and maintain



Immediately stop running generator for check and repair if any abnormality is found. Restart after checking and maintain. Continue running abnormal generator may cause unexpected serious accidents.

Fault	Reason		Troubleshooting
Engine doesn't start	Starter motor doesn't start	Battery is low or no power	Charge or replace
		Battery unclamped or rut	Install the terminal after cleaning or replace
		The battery and starter motor connection is disconnected.	Repair or replace
		Starting switch badness	Repair or replace
		Starter motor fault	Repair or replace
	Starter motor run, but not start	No fuel	Refill fuel
		Fuel pipe walled up or flat	Clean or replace
Air in the fuel pipe		Empty air	
Ignition system is abnormal	Spark plug	Gap is not appropriate	Regulate
		carbon lay-down	Clean or replace
Fuel system is abnormal	Carburetor	Overflow	Regulate
		Walled up or damaged	Open and clean or replace
		throttle valve is abnormal	Check and regulate
Engine stops because of low oil pressure.	Oil is not enough		Refill oil
	Oil pressure switch badness		Replace switch
Abnormal noise	Engine	Abnormal voice	Repair
	Alternator	Bad bearing	Replace
		Fasten bolt loose	Tighten
Engine cover	Abnormal voice	Repair	
Overheat	Check around		Move sundries from air outlet
	The lube is not appropriate		Replace
	Overload		Drop to rated load
Break badness	Bad breaker		Contact with service
	Load circuit short		Check
Higher Fuel consumption engine	Carburetor	The tighten ordain bolt leakage	Tighten
		Carburetor damaged	Replace
Engine deflagration	Cylinder head combustion chamber carbon laydown		Open and clean
	Cylinder head gasket damaged		Replace
Cannot reach the rated power	Air filter walled up		Clean or replace
	AVR badness		Contact with dealer
	Low rotation speed		Improve the rated speed

3. START AND RUN THE GENERATOR SET

1. According to the "Check before running" requirement, finish each check. Then turn the fuel tank switch to "ON".
2. Disconnect all the outer loads on the AC receptacle.
3. Turn the breaker to the "OFF" position, draw the choke handle, and turn off the choke.
4. Turn the "starting switch" key to the "RUN", the generator is in the standby mode after the "digital control panel" display initial interface.
5. Turn the "starting switch" key to the "START", loose the key after generator started, and the key will return to "RUN" automatically. In the first time, if start fail, restart it after 30seconds.
6. Run the generator set
Loose "starter switch" key after starting, push the throttle handle back to its position, then the generator will be in the automatic running state.
7. After making sure the generator voltage, frequency and other running state meet the using require, close the main breaker, then it can supply output power to load.



- Preheat generator three minute without load after the set starting, then running with load
 - The new generator set have a running-in period, the period is the initial 20 hours, only with 50% load during the running-in period, or it will shorten the set life.
8. Checks during the running
 - 1) Whether there is abnormal sound or vibration;
 - 2) Whether the engine misfires or runs rough;
 - 3) Check the color of the exhaust. (Is it black or too white?)
 If you notice any of the above-mentioned phenomenon happened, stop the engine and find out the fault cause or contact with our agents.



- If the engine has been running, the muffler will be very hot. Be careful not to touch the muffler.

9. Load

CAUTION

- Do not start 2 or more machines simultaneously. Start them one by one.
- Do not use floodlight together with other machines.
- Open the breaker, observe the voltmeter on the control panel, the voltmeter should point to $230V \pm 5\%$ (50Hz) for single-phase generating set; about 400V (50Hz) for three-phase generating set, then the loading can be carried out.
- Connect the equipment to the generating set in order. For the matter of the motor load, firstly the heavy-duty motor should be connected, and then the light-duty motors. If the operation is false, the generating set will lag or stop suddenly. It is necessary to unload the generating set immediately and turn off the main switch and do checks.

CAUTION

- Electrical equipment (including electrical lines and plugs connection) could not be defective. By the effect of mechanical stress, make sure to use the rubber sheathed flexible cable or analog (accord with IEC245-4).
- Limit length of electric line when using the extension line or distributed network is: less than 60m for cables of 1.5mm², and less than 100m for cables of 2.5mm².

7. PERIODIC MAINTENANCE AND SERVICE

Periodic maintenance and service are very important for keeping the engine in good condition durable.

Stop the generator before performing any service. If the generator must be run, make sure the area is well ventilated. The exhaust contains poisonous carbon monoxide gas.

1. Periodic maintenance table

Item	Interval	Each time used	First used or 20Hrs	Each three months or 100Hrs	Each six months or 500Hrs	Each year or 1000Hrs
		○	☆ First time	○	○	○(2)
Oil	Check	○				
	Replace		☆ First time	○		
Battery electrolyte	Check			○		
	Refill					
Air filter	Check	○			○	
	Clean				○	
Fuel filter cup	Clean			○		
Spark plug	Clean regulate			○		Replace
Valve clearance	Clean regulate					○(2)
Cylinder cover	Clean					○(2)
Fuel tank	Clean			○		
Fuel pipe	Check	Check each two year, replace if the pipe is aged and transmutative.				

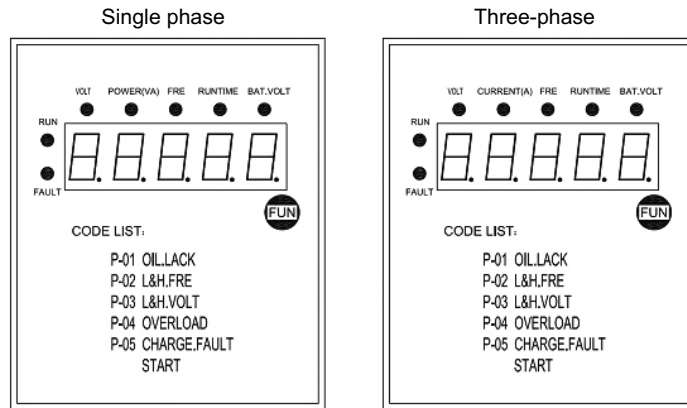
☆ First: it is the first check time. After that, check according to the normal period. The checking time is slightly different between the different engines, please refer to the engine manual.

Note:

- 1) It is necessary to shorten the maintenance interval when used in dirty areas..
- 2) This item maintained by Kipor agent.
- 3) Don't pour waste oil into the sewer or the river to prevent environment pollution. The exhaust oil from generator must be stored in container. To deal with bad matter, such as fuel, oil cooling water, solvent, filter and battery, according to the local law.

CAUTION

Stop the engine before maintaining.



3. Code indicator light function

P-01 Low oil pressure: indicating the generator oil pressure is too low, the generator will auto-stop.

P-02 Over-frequency: indicating the frequency over-high or over-low, the generator will auto-stop.

P-03 Over-voltage: indicating the voltage over-high or over-low, the generator will auto-stop.

P-04 Generator set overload: indicating the generator overload, it will auto-stop.

P-05 Charging fault: indicating charging system fault.

START: indicating generator set start



The control panel operation refer to the Simple-style Panel Manual.

4. STOP PROCEDURE



First disconnect the unit and load, then stop the generator.

1. Normal stop

- 1) Cut off the load from the generator.
- 2) Turn the breaker to "OFF" position.
- 3) Turn the starter switch to "STOP" position after running for 1-3 minutes with zero load.
- 4) Turn off the fuel switch after the generator stopped.

2. Emergence stop

a. When generator set is running, the operator should keep eyes on its running state. If there is anything wrong, stop the generator according to the normal procedure.

b. If there is any emergency which may cause serious damage to the generator or person injuries, eg. short circuit, electric shock and so on. The operator should immediately apply the emergency stop: pressing hard the "Emergency stop" button could stop the generator at once. (Caution: there is no emergency stop on the KGE12E/KGE12E3 generator, please turn the "Starting switch" to the "stop" position.

c. When the problem has been solved after stopping the generator, you should reset the "Emergency stop" button before restarting the machine, rotate the "Emergency stop" in the arrow direction and the button will reset.



Reset the pressed "Emergency stop", then the generator will run again. And restart the generator according to the normal procedure.



Do not use "Emergency stop" when in non-emergency situations. If that, "Emergency stop" may cause some damage to the generator.

5. LONG-TERM STORAGE

If store the generator sets for long periods, please store the gen-sets in the dry, clean and ventilated places. Store as following:

- 1) Stop engine after engine been running for three minutes. Drain off oil completely and refill the new oil during the engine is still hot.
- 2) In order to prevent condensation in the fuel tank, drain off fuel completely, and remove the sediments.
- 3) Put lube on the supporting point and connection port of speed regulating system.
- 4) Please clean mud, dust and oil remained on the machine surface. If there is paint stripping place, then respray.
- 5) Disconnect cable of storage battery from (-) terminal. Please charge the storage battery once per month to resolve intrinsic shelf depreciation during machine storage.
- 6) Must finish periodic check prior to maintenance.
- 7) Please cover the unit with plastic housing, in order to prevent water or dust into control box, radiator and muffle of exhaust pipe. And add safeguard for the outdoor generator.
- 8) Store the machine in the place without moisture or dust and with good ventilation.
- 9) After a long storage, refer to the “2 Pre-start preparations” before restart the generator.

About the engine refer to the engine manual.

6. CONTROL PANEL FUNCTION

1. Button function

Setting of various electric parameters display in circle

- 1) When the generator set is out of trouble, press the “Function’ button for one or two seconds, and then the various electric parameters will be displayed in circle.
- 2) When the electric parameters display is cycling, press the “Function’ button for one or two seconds, the generator will quit this state.

Button functionsetting function

- 1) Press the “Function” button for five second when starting the generator, it enters the parameter setting function.
- 2) Press the “Function” button to choose the setting you want among the four kinds below:
 - (1) Phase setting
 - (2) Frequency setting
 - (3) Voltage setting
 - (4) Current setting

2. Indicator light function:

Battery voltage: indicating battery voltage.

Running time: indicating the total running time of generator.

Frequency: indicating the generator frequency.

Three-phase current: indicating the generator current.

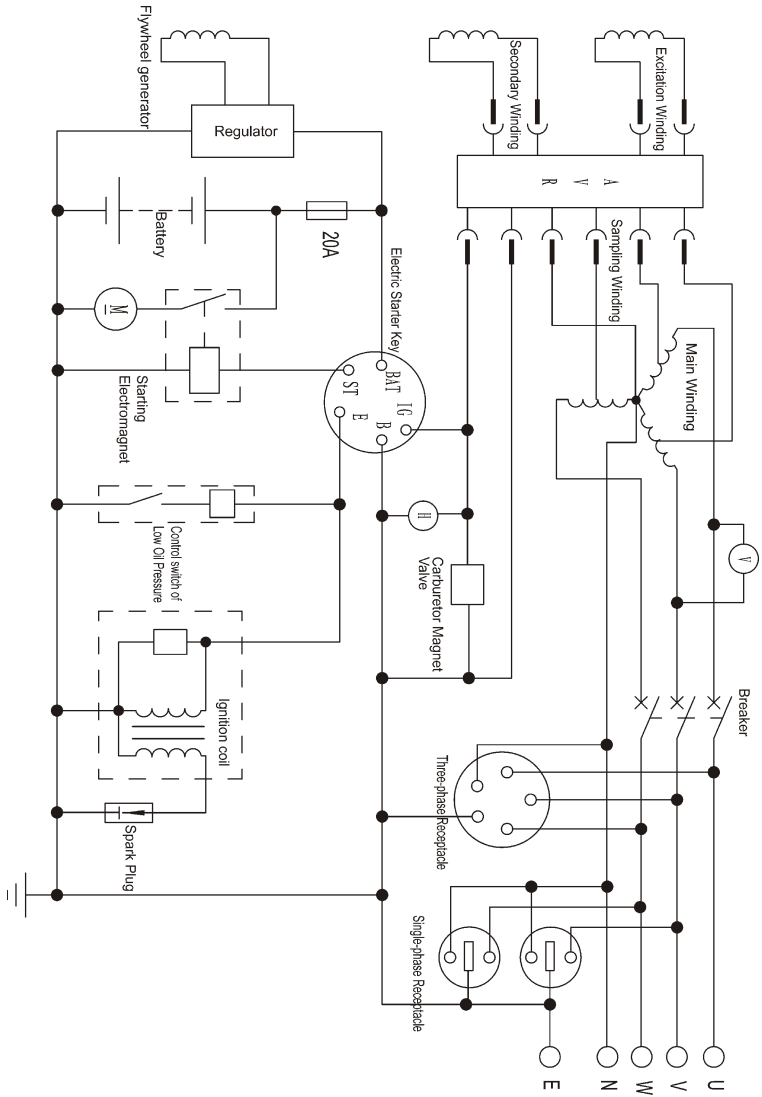
Single-phase power: indicating the generator power.

Generator voltage: indicating generator voltage.

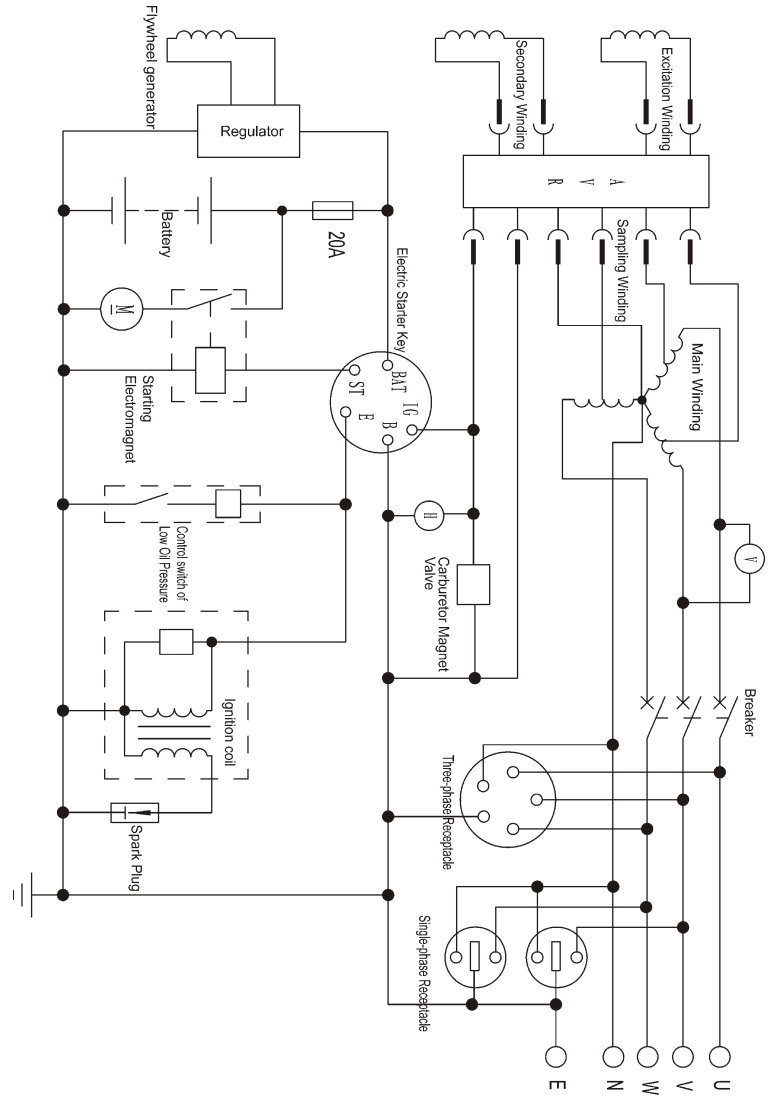
Generator set running: indicating: indicating whether the power exist.

Running fault: indicating the running fault of generator, and you can inquire fault refer to code list.

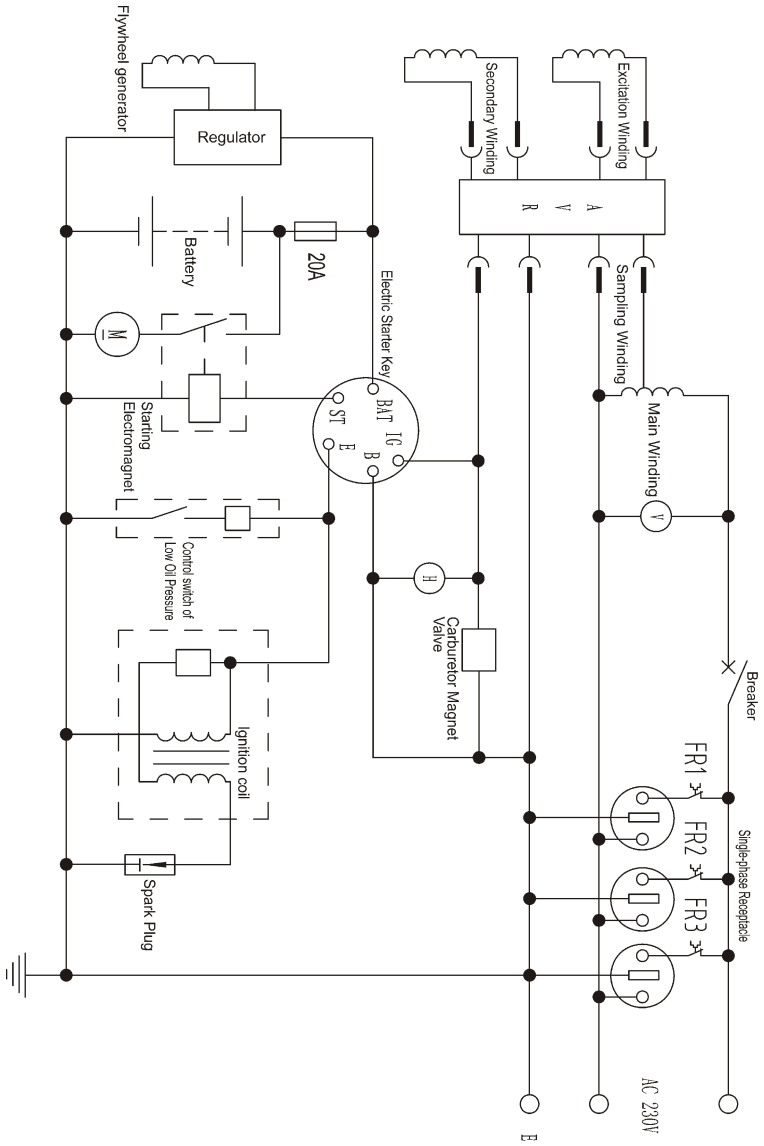
KGE12E3 ELECTRICAL WIRING DIAGRAM



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