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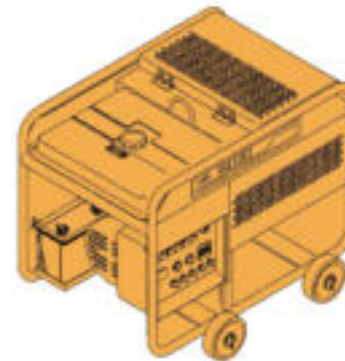
KIPOR POWER OPERATION MANUAL

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

KIPOR

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**GASOLINE
GENERATOR**

**KGE12E
KGE12E3**

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PREFACE

Congratulation and 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

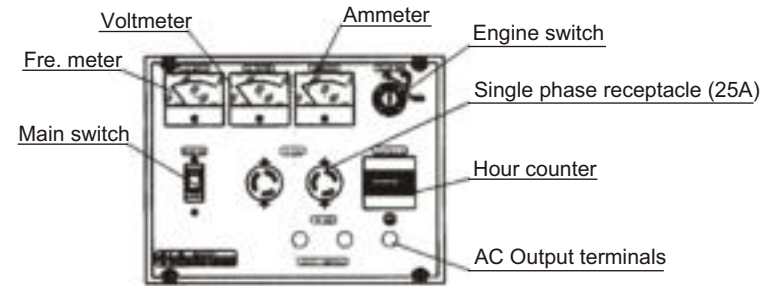
1. Use SAE 10W-30 Lubrication oil. After the first oil change at 10 hours operation.
2. Do not connect the generator output to commercial AC outlets.
3. For information about the engine operation and maintenance, please see our engine's manual.

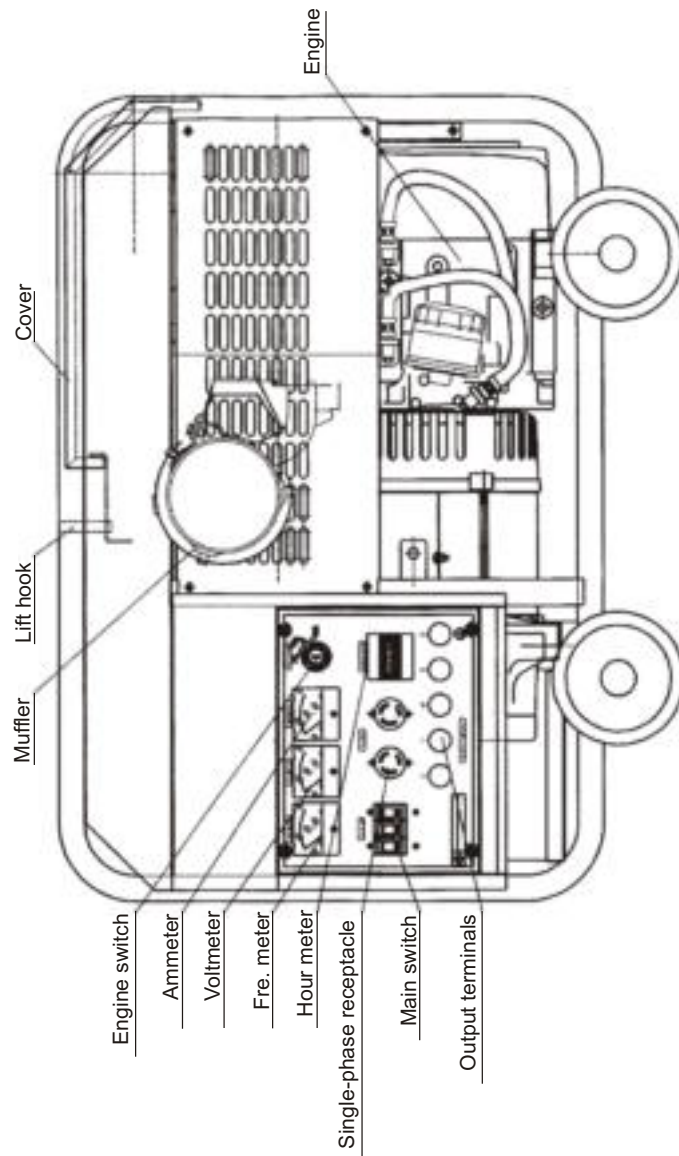
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1. NAMES OF IMPORTANT PARTS AND COMPONENTS

KGE12E Control Panel





Specification

MODEL			KGE12E	KGE12E3
Generator	AC OUTPUT	50Hz Prime	8.5kVA	10.5kVA
		Standby	9.5kVA	11.5kVA
	Phase		Single/Two line	Three/Four line
	Power Factor		1.0	0.8
	Voltage		*230V	*400V
	Excitation System		Self-excited	
	Pole		2	
	Drive System		Directly coupled to engine	
	Voltage Regulation		± 1.5% (Rated Speed)	
MODEL			KG690	
Engine	Rated output		12.0kW/3000rpm, 14.0kW/3600rpm	
	Type		Air-forced four-stroke OHV gasoline Engine	
	Cylinder Volume		688cc	
	No. of Cylinder		2	
	Starting System		Electric (recoil)	
	Fuel Consumption		370g /kWh	
	Fuel Tank Capacity		26L	
	Noise Level (7m/dB)		72dB/50Hz, 78dB/60Hz	
Net weight (with wheels)			152(159) kg	
Net Dimensions (with wheels) length × width × height			910 × 600 × 620 mm (910 × 785 × 710mm)	

2. PREPARATORY STEPS FOR OPERATION

1) Environmental Requirements

1-1) Outdoor use

- A) Install your unit in a dry and dustless place.
- B) Avoid the direct sunshine. Place your unit in shade.
- C) Keep your unit on a level ground so that the unit will not move by itself. For safely, Fix the unit on the ground by pegging.

1-2) Indoor use

- A) 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.
- B) Keep the air inlet /outlet and the exhaust gas outlet 1.5m away from any obstacle.
- C) Use under 40 degrees temperature.
- D) Install your unit on a level surface.

2) Preparation for the engine

- A) Check level of fuel gasoline, Lubrication oil. Add any of those fluids if is below the sufficient level specified in the Engine Owner's Manual.
- B) Check all major bolts and nuts on the engine. Tighten any loose bolts and nuts.

3) Electrical connection with load

- A) Make sure that the load does not exceed the power capacity of your unit. Connect electrical connections properly.

3. SAFETY PRECATIONS FOR SERVICING

- A). Only qualified persons should test, maintain., and repair this unit.
- B). Always wear a face shield, rubber gloves and protective clothing when working on the unit.
- C). Do not touch the generator unit or any part of load with your bare hands or wet hands
- D). Keep hands, hair, loose clothing, and tools away from moving parts such as fans, belts and rotors.
- E). Do not breathe exhaust fumes.
- D). Stop engine and let it cool off before checking or adding fuel.
- G). Do not add fuel while smoking or unit is near any sparks or open flames.
- H). Observe correct polarity (+ & -) on batteries.
- I). Do not tip battery.
- J). Use equipment of adequate capacity to lift and support unit and components.

4. WARM-UP PROCEDURE

- A) Check all fluids daily. (The unit is shipped without lubricating oil.)
- B) Turn the fuel cock to ON position.
- C) Set the main switch to OFF.
- D) Pull out the Chock lever.
- E) Turn the engine start key to START position.
- F) Warm-up time is about 3-5 minutes.

5. STARTING-UP PROCEDURE

- A) Return speed control level to left position.
- B) Ensure voltmeter indicates normal.
- C) Set the main switch to ON.
- D) Observe the voltage is in the normal loaded range.

6. STOP PROCEDURE

- A). Set the main switch to OFF.
- B). Turn the engine start key to STOP position.
- C). Close the fuel cock if the unit is in storage or transportation.

7. SIMPLIFIED TROUBLESHOOTING GUIDE

This guide is intended to give brief information for troubleshooting with no testing or measuring instruments to check the unit.

However, testing and measuring instruments are required to diagnose parts and components in many trouble cases.

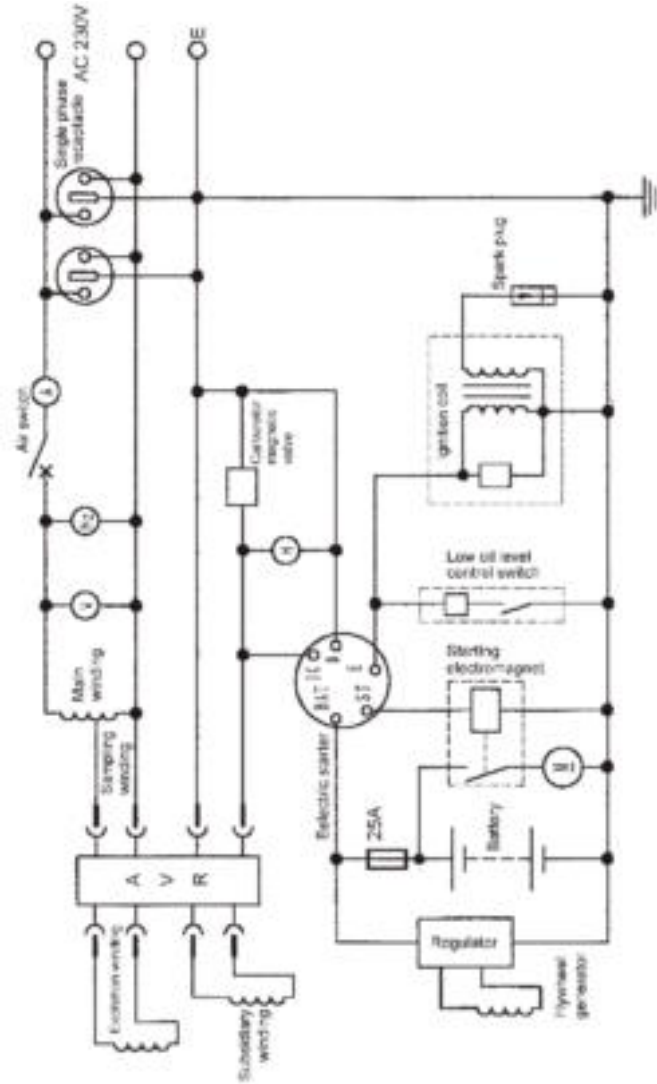
If you cannot determine the cause by visual inspection, you should consult your dealer whom you purchased this unit from.

8. MALFUNCTION AND COUNTERMEASURES

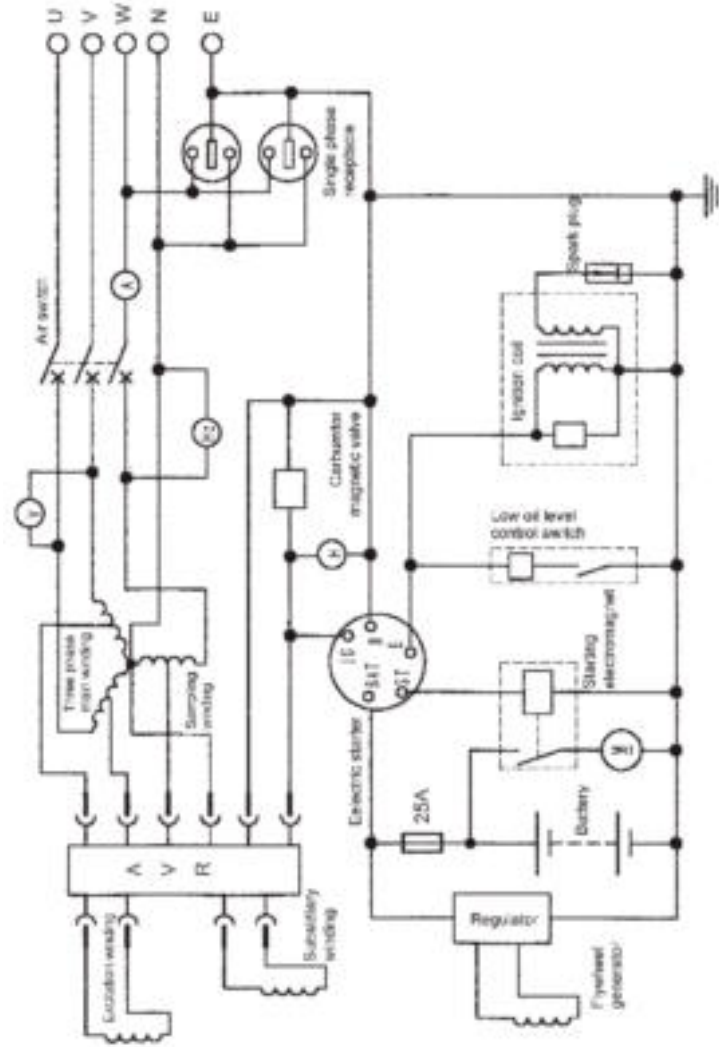
Complaint	Possible cause	Remedy
No power or Insufficient power	<ol style="list-style-type: none"> 1. Engine speed too low 2. Rotor diode breakage 3. Rotor wiring breakage 4. Rotor wiring breakage 5. Main switch breakage 6. AVR failure 	<ol style="list-style-type: none"> 1. Speed up engine until rated voltage is reached. 2. Replace diode 3. Repair or replace 4. Repair or replace 5. Replace switch 6. Replace VAR
Power is available but falls upon loading	<ol style="list-style-type: none"> 1. Engine speed too low 2. Too long a line is used between generator and load 3. The load is too large. 	<ol style="list-style-type: none"> 1. Speed up engine until rated voltage is reached. 2. Relocate the unit as close as possible to the load 3. Reduce the load to and below the capacity limit of the unit.
Loading trips off the main switch instantly	<ol style="list-style-type: none"> 1. Overloading 2. Fault on the load side 	<ol style="list-style-type: none"> 1. Reduce the load 2. Check to locate the faulted circuit, and repair it.
Noise from bearing	Bearing worn out	Replace bearing
Voltmeter doesn't function	Voltmeter failure	Replace Voltmeter
Ammeter doesn't function	Ammeter failure	Replace Ammeter

9. ELECTRICAL SKELETON DIAGRAM

KGE12E ELECTRICAL SKELETON DIAGRAM



KGE12E3 ELECTRICAL SKELETON DIAGRAM



10. 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.

The application of the single-core insulating cable section mm²

Length beneath Current	50m	75m	100m	125	150	200
50A	8	14	22	22	30	38
100A	22	30	38	50	50	60
200A	60	60	60	80	100	125
300A	100	100	100	125	150	200

The application of the multi-core insulating cable section mm²

Length beneath Current	50m	75m	100m	125	150	200
50A	14	14	22	22	30	38
100A	38	38	38	50	50	60
200A	38×2	38×2	38×2	50×2	50×2	50×2
300A	60×2	60×2	60×2	60×2	80×2	100×2

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

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