WUXI KIPOR POWER CO., LTD.

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PTEH R DIGITAL DIESEL GENERATOR SET

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Thank you for purchasing our generators.
This manual covers operation and maintenance of ID6000 generator.
All information in this publication is based on the latest product information available at the time of approval for printing.
We reserve the right to make changes at any time without notice and without incurring any obligation.
No part of this publication may be reproduced without written permission.
This manual should be considered a permanent part of the generator and should be reserved with it if it is resold.

Pay special attention to statements preceded by the following words:

⚠️ **DANGER**
Failure to properly follow these precautions can result in serious injury or DEATH!

⚠️ **WARNING**
Failure to properly follow these precautions can result in property damage, serious injury or DEATH!

⚠️ **CAUTION**
The generators are designed to give safe and dependable service if operated according to instructions. Failure to do so could result in personal injury or equipment damage.

If a problem should arise, or if you have any questions about the generator, consult an authorized dealer.

⚠️ **WARNING**
Indicates a possibility of personal injury or equipment damage if instructions are not followed.
Read and understand the Owner's Manual before operating the generator.
Operate only in well ventilated areas. Exhaust gas contains poisonous carbon monoxide, and can be deadly.
Always stop engine before refueling. Wait 5 minutes before restarting.
Check for spilled fuel or leaks. Clean and/or repair before use.
Keep any sources of ignition away from fuel tank at all times.
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1. SAFETY INSTRUCTION

- The generators are designed to give safe and dependable service if operated according to instructions. Read and understand the Owner's Manual before operating the generator. Failure to do so could result in personal injury or equipment damage.
- Please use diesel. Gasoline and paraffin is not allowed to use.
- Exhaust gas contains poisonous carbon monoxide. Never run the generator in an enclosed area. Be sure to provide adequate ventilation.
- Generator should be earthed with a wire to avoid electric shock.

- The muffler becomes very hot during operation and remains hot for a while after stopping the engine. Be careful not to touch the muffler while it is hot. Let the engine cool before storing the generator indoors.
- The engine exhaust system will be heated during operation and remain hot immediately after stopping the engine. To prevent scalding, pay attention to the warning marks attached to the generator.
- Battery charge should be carried out in the place with good ventilation. Smoke and spark is forbidden.

2. 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".

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

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

<table>
<thead>
<tr>
<th>No.</th>
<th>Copper cables model</th>
<th>Single core Current capacity (25℃)(A)</th>
<th>Voltage Drop mv/M</th>
<th>Three cores Current capacity (25℃)(A)</th>
<th>Voltage Drop mv/M</th>
<th>Four cores Current capacity (25℃)(A)</th>
<th>Voltage Drop mv/M</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>VV22</td>
<td>YJV22</td>
<td>VV22</td>
<td>YJV22</td>
<td>VV22</td>
<td>YJV22</td>
<td>VV22</td>
</tr>
<tr>
<td>1</td>
<td>1.5mm²</td>
<td>20</td>
<td>25</td>
<td>30.86</td>
<td>13</td>
<td>18</td>
<td>30.86</td>
</tr>
<tr>
<td>2</td>
<td>2.5mm²</td>
<td>28</td>
<td>35</td>
<td>18.9</td>
<td>16</td>
<td>22</td>
<td>18.9</td>
</tr>
<tr>
<td>3</td>
<td>4mm²</td>
<td>38</td>
<td>50</td>
<td>11.76</td>
<td>24</td>
<td>32</td>
<td>11.76</td>
</tr>
<tr>
<td>4</td>
<td>6mm²</td>
<td>48</td>
<td>60</td>
<td>7.86</td>
<td>32</td>
<td>41</td>
<td>7.86</td>
</tr>
<tr>
<td>5</td>
<td>10mm²</td>
<td>65</td>
<td>85</td>
<td>4.87</td>
<td>45</td>
<td>55</td>
<td>4.87</td>
</tr>
<tr>
<td>6</td>
<td>16mm²</td>
<td>88</td>
<td>110</td>
<td>2.95</td>
<td>61</td>
<td>75</td>
<td>2.95</td>
</tr>
<tr>
<td>7</td>
<td>25mm²</td>
<td>113</td>
<td>157</td>
<td>1.87</td>
<td>85</td>
<td>105</td>
<td>1.87</td>
</tr>
<tr>
<td>8</td>
<td>35mm²</td>
<td>142</td>
<td>192</td>
<td>1.35</td>
<td>105</td>
<td>130</td>
<td>1.35</td>
</tr>
<tr>
<td>9</td>
<td>50mm²</td>
<td>171</td>
<td>232</td>
<td>1.01</td>
<td>124</td>
<td>155</td>
<td>1.01</td>
</tr>
<tr>
<td>10</td>
<td>70mm²</td>
<td>218</td>
<td>294</td>
<td>0.71</td>
<td>160</td>
<td>205</td>
<td>0.61</td>
</tr>
<tr>
<td>11</td>
<td>95mm²</td>
<td>265</td>
<td>355</td>
<td>0.52</td>
<td>201</td>
<td>248</td>
<td>0.45</td>
</tr>
<tr>
<td>12</td>
<td>120mm²</td>
<td>305</td>
<td>410</td>
<td>0.43</td>
<td>235</td>
<td>292</td>
<td>0.36</td>
</tr>
<tr>
<td>13</td>
<td>150mm²</td>
<td>355</td>
<td>478</td>
<td>0.36</td>
<td>275</td>
<td>343</td>
<td>0.3</td>
</tr>
<tr>
<td>14</td>
<td>185mm²</td>
<td>410</td>
<td>550</td>
<td>0.3</td>
<td>323</td>
<td>400</td>
<td>0.25</td>
</tr>
<tr>
<td>15</td>
<td>240mm²</td>
<td>490</td>
<td>660</td>
<td>0.25</td>
<td>381</td>
<td>480</td>
<td>0.21</td>
</tr>
</tbody>
</table>

*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.*
Ensure safe operation

Gasoline is extremely flammable and explosive under certain conditions. Refuel in a well ventilated area with the engine stopped.
Keep away from cigarette, smoke and sparks when refueling the generator. Always refuel in a well-ventilated location.
Wipe up spilled gasoline at once.

Connections for standby power to a building's electrical system must be made by a qualified electrician and must comply with all applicable laws and electrical codes. Improper connections can allow electrical current from the generator to back feed into the utility lines. Such back feed may electrocute utility company workers or others who contact the lines during a power outage, and when utility power is restored, the generator may explode, burn, or cause fires in the building's electrical system.

Always make a pre-operation inspection before you start the engine to prevent an accident or equipment damage.
Place the generator at least 1m away from buildings or other equipment during operation.
Operate the generator on a level surface. If the generator is tilted, fuel spillage may result.
Know how to stop the generator quickly and understand operation of all the controls. Never permit anyone to operate the generator without proper instructions.
Keep children and pets away from the generator when it is in operation.
The generator is a potential source of electrical shocks when misused; do not operate with wet hands.
Do not operate the generator in rain or snow and do not let it get wet to avoid electric shock.

13. APPENDIX

1. 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%)

<table>
<thead>
<tr>
<th>Altitude (m)</th>
<th>Ambient temperature (°C)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>25</td>
</tr>
<tr>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>500</td>
<td>0.93</td>
</tr>
<tr>
<td>1000</td>
<td>0.87</td>
</tr>
<tr>
<td>2000</td>
<td>0.75</td>
</tr>
<tr>
<td>3000</td>
<td>0.64</td>
</tr>
<tr>
<td>4000</td>
<td>0.54</td>
</tr>
</tbody>
</table>

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:

$P = P_n \times (C-0.02) = 5 \times (0.82-0.02) = 4KW$
2. SAFETY LABEL LOCATION

These labels warn you potential hazards that can cause serious injury. Read the labels and safety notes and precautions described in manual carefully.

- Fuel use sticker
- Hook sticker
- Low oil pressure warning sticker
- Operation warning sticker
- Battery power warning
- Generator parameter sticker
- Frequency sticker
- Outdoor use sticker
- Model sticker
- Fuel warning sticker
- High temperature sticker
3. COMPONENT IDENTIFICATION

1. Profile drawing

- Boom
- Fuel filler
- Muffler exhaust pipe
- Maintenance door
- Starter motor
- Cover plate of fuel filler
- Handle
- Panel
- Module
- Battery
- Side door
- Air filter sticker
- Series No
- Battery maintenance sticker

12. ELECTRIC DIAGRAM

12.1 Dual voltage

- Boom
- Fuel filler
- Muffler exhaust pipe
- Maintenance door
- Starter motor
- Cover plate of fuel filler
- Handle
- Panel
- Module
- Battery
- Side door
- Air filter
- Diesel filter
- Air filter sticker
- 1. Battery maintenance cover plate
- 2. Battery fixing belt
- 3. Battery
2. Electric system
2.1 Elements and function
Digital diesel generator consists of alternator, AC inverter, electric regulator, electric control system, harness and output/input units. The functions of each units are listed as follow:

2.2 Alternator:
Alternator adopts permanent magnet generator, consisting of stator, rotor and shell. The rotor without bearings adopts one piece design with engine fixed at one side of crankshaft, brushless and natural draft. The stator adopts multi-pole and multi-voltage windings. It is rotates with the crankshaft to output three phase AC. The generator features small volume, simple structure and high efficiency.

2.3 AC inverter:
AC voltage output by alternator is rectified and inverted for AC loads. AC inverter module includes protection for overload, over voltage, over frequency, over heat etc.

2.4 Electric regulator:
Electric regulator features convenient installation, rapid response, good regulation and safety. It can automatically regulate the engine speed depending on the loads to ensure the best economics.

Note:
Engine speed range should be according with the AC inverter total output power:
Rated low speed——zero load
Rated high speed——Rated max. output power

3. Control panel

<table>
<thead>
<tr>
<th>11. SPECIFICATION</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Model</strong></td>
</tr>
<tr>
<td>Rated frequency (Hz)</td>
</tr>
<tr>
<td>Rated output (kVA)</td>
</tr>
<tr>
<td>Max. output (kVA)</td>
</tr>
<tr>
<td>Rated voltage (V)</td>
</tr>
<tr>
<td>Rated current (A)</td>
</tr>
<tr>
<td>Rated rotation speed (r/min)</td>
</tr>
<tr>
<td><strong>Alternator</strong></td>
</tr>
<tr>
<td>Motor type/Converter type</td>
</tr>
<tr>
<td>Loop type</td>
</tr>
<tr>
<td>Power factor(COSØ)</td>
</tr>
<tr>
<td>Insulation grade</td>
</tr>
<tr>
<td><strong>Engine</strong></td>
</tr>
<tr>
<td>Cylinder type</td>
</tr>
<tr>
<td>BoreXStroke</td>
</tr>
<tr>
<td>Displacement</td>
</tr>
<tr>
<td>Compression ratio</td>
</tr>
<tr>
<td>Rated power</td>
</tr>
<tr>
<td>Lub. mode</td>
</tr>
<tr>
<td>Lubricant</td>
</tr>
<tr>
<td>Lubricant capacity</td>
</tr>
<tr>
<td>Starting system</td>
</tr>
<tr>
<td>Battery capacity</td>
</tr>
<tr>
<td>Fuel type</td>
</tr>
<tr>
<td>Fuel consumption</td>
</tr>
<tr>
<td>Fuel tank capacity</td>
</tr>
<tr>
<td>Continuous running time (hr) (at rated output)</td>
</tr>
<tr>
<td>Noise (zero load- full load)</td>
</tr>
<tr>
<td>Dimension (LxWXH)</td>
</tr>
<tr>
<td>Net weight</td>
</tr>
<tr>
<td>Structure</td>
</tr>
</tbody>
</table>
3.1. LCD instruction:

1. Socket
2. Breaker
3. LCD monitor
4. Lamp
5. Energy saving switch
6. Electric lock (start switch)
7. Earthing end
8. Socket
9. Reset switch
10. ATS option switch

3.1.1 Instructions of dual voltage connector

<table>
<thead>
<tr>
<th>Item</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>A phase AC voltage input</td>
</tr>
<tr>
<td>2</td>
<td>B phase AC voltage input</td>
</tr>
<tr>
<td>3</td>
<td>A phase AC voltage input</td>
</tr>
<tr>
<td>4</td>
<td>B phase AC voltage input</td>
</tr>
<tr>
<td>5</td>
<td>Series connection when closed</td>
</tr>
<tr>
<td>6</td>
<td>Parallel connection when open</td>
</tr>
<tr>
<td>7</td>
<td>A phase current transformer input</td>
</tr>
<tr>
<td>8</td>
<td>A phase current transformer input</td>
</tr>
<tr>
<td>9</td>
<td>B phase current transformer input</td>
</tr>
<tr>
<td>10</td>
<td>B phase current transformer input</td>
</tr>
</tbody>
</table>

3.1.2 Instructions of single voltage connector

<table>
<thead>
<tr>
<th>Item</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>AC voltage input</td>
</tr>
<tr>
<td>2</td>
<td>AC voltage input</td>
</tr>
<tr>
<td>3</td>
<td>Current transformer input</td>
</tr>
<tr>
<td>4</td>
<td>Relay control signal output (+12v)</td>
</tr>
<tr>
<td>5</td>
<td>Current transformer input</td>
</tr>
<tr>
<td>6</td>
<td>Relay control signal output (GND)</td>
</tr>
<tr>
<td>7</td>
<td>External battery GND</td>
</tr>
<tr>
<td>8</td>
<td>External battery GND</td>
</tr>
<tr>
<td>9</td>
<td>External battery 12V</td>
</tr>
</tbody>
</table>

10. TROUBLE SHOOTING

When the engine will not start:

- Is there fuel in the tank?
  - No: Refill the fuel tank.
  - Yes: Move on.
- Is there enough oil in the engine?
  - No: Add the recommended oil.
  - Yes: Move on.
- Is the battery voltage 12 to 15V?
  - No: Replace or charge the battery.
  - Yes: Take the generator to an authorized dealer.

The engine fails to run with load:

- Is the output indicator lamp on?
  - No: Take the generator to an authorized dealer.
  - Yes: Move on.
- Is the AC breaker switched on?
  - No: Turn on the breaker.
  - Yes: Move on.
- Is the overload indicator lamp on?
  - No: Lower down the load or replace the generator for a larger one.
  - Yes: Move on.
- Is the electric appliance in good condition?
  - No: Replace or charge the electric appliance.
  - Yes: Take the generator to an authorized dealer.
9. TRANSPORTING/STORAGE

I spillage when transporting or during temporary storage, the genera-tor should be secured upright in its normal operating position. When transporting the generator:

**WARNING**
- Do not overfill the tank (there should be no fuel in the filler neck)
- Do not operate the generator while it is on a vehicle. Take the generator off the vehicle and use it in a well ventilated place.
- Avoid a place exposed to direct sunlight when putting the generator on a vehicle. If the generator is left in an enclosed vehicle for many hours, high temperature in-side the vehicle could cause fuel to vaporize resulting in a possible explosion.
- Do not drive on a rough road for an extended period with the generator on board, if you must transport the generator on a rough road, drain the fuel from the generator beforehand.

Before long while storag, the following items should be done:
1. Run the generator for 5 minutes without any load.
2. Drainage the fuel to a clean container and clean the fuel tank.
3. Clean the dirty in generator. Seal the generator with a plastic cover for safekeeping in dry place.

**WARNING**
Fuel is explosive and flammable. Smoke, fire and spark are forbidden.

1. For example: LCD-230V
   1—Genset output voltage (V); 2—Genset current with load (A);
   3—Genset frequency (Hz); 4—Genset running time;
   5—Battery voltage.
   Shift the parameters by the button

2. LCD-120V / 240V
   (1) Output in parallel:
   1—output voltage; 2—output current; 3—output frequency;
   4—Running time; 5—Battery voltage;
   (2) Output in series:
   1—Sum of A, B phase voltage; 2—A phase voltage; 3—B phase voltage;
   4—A phase current; 5—B phase current; 6—output frequency;
   7—Running time; 8—Battery voltage;

3.1.3 Maintenance information

1. Maintenance will be reminded after specific running time. LCD lamp twinkles and the codes will be displayed. If there is many codes, they may be displayed in turns at an interval of 3 seconds if there is many codes.

<table>
<thead>
<tr>
<th>Item</th>
<th>Maintenance information</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Oil</td>
<td>SV 1</td>
</tr>
<tr>
<td>2</td>
<td>Oil filter</td>
<td>SV 2</td>
</tr>
<tr>
<td>3</td>
<td>Air filter</td>
<td>SV 3</td>
</tr>
<tr>
<td>4</td>
<td>Nozzle pump</td>
<td>SV 4</td>
</tr>
<tr>
<td>5</td>
<td>Valve clearance</td>
<td>SV 5</td>
</tr>
<tr>
<td>6</td>
<td>Tank and filter</td>
<td>SV 6</td>
</tr>
</tbody>
</table>

2. Press the button to read the parameters. Release the key for 2 seconds to have the maintenance Remind.
3. Press the button for 5 seconds to clear the maintenance information.

3.2 Instruction of energy saving switch:

Energy saving switch:
When Energy saving switch locates the side of "OFF", the speed of engine varies when output power varies. Power increases while speed increases. Engine will run under the low speed without any load; the machine will work in perfect economic state.

When Energy saving switch locates the side of "ON", Engine will run under the max. speed. Inverter module reaches max. power. This mode must be used during sudden load and unload.
4. PRE-OPERATION CHECK

Be sure to check the generator on a level surface with the engine stopped.

1. Check the engine oil level

Using nondetergent oil or 2-stroke engine oil could shorten the engine’s service life.

Use a high-detergent, premium quality 4-stroke engine oil. certified to meet CC or CD grade SAE10W-30 oil is recommended.

Select the appropriate viscosity of oil according to the ambient temperature.

<table>
<thead>
<tr>
<th>Viscosity---Ambient temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single grade</td>
</tr>
<tr>
<td>SAE10W</td>
</tr>
<tr>
<td>SAE15W</td>
</tr>
<tr>
<td>SAE20W/20</td>
</tr>
<tr>
<td>SAE25W/25</td>
</tr>
<tr>
<td>SAE30W/30</td>
</tr>
<tr>
<td>SAE35W/30</td>
</tr>
<tr>
<td>SAE40W/40</td>
</tr>
<tr>
<td>SAE45W/40</td>
</tr>
<tr>
<td>SAE50W/50</td>
</tr>
</tbody>
</table>

Open the left door, loose the cap and wipe the dipstick with a clean rag. Check the oil level by inserting the dipstick in the filler hole after fastened.

If the oil level is below the end of the dipstick, refill the recommended oil up to the top of the oil filler neck.

- Running the engine with insufficient oil can cause serious engine damage.
- The Low Oil Alarm System will automatically stop the engine before the oil level falls below the safe limit. However, to avoid the inconvenience of an unexpected shutdown, it is still advisable to visually inspect the oil level regularly.

4. Pump maintenance:
Do not dismantle the pump randomly. Please contact KIPOR dealer if special tools are required for pump replace and clean.

5. Battery maintenance
- Unscrew the bolts on cover plate, remove the cover plate;
- Remove the fixing belt;
- Replace the battery and fasten the fixing belt, install the cover plate, fasten the bolts and close the side door.
2. AIR CLEANER SERVICE

A dirty air cleaner will restrict air flow to the engine cylinder. To prevent it, service the air cleaner regularly. Service more frequently when operating the generator in extremely dusty areas.

- **CAUTION**
  - Do not use gasoline or low flash point solvents for cleaning. They are flammable and explosive under certain conditions.
  - Please replace the filter element if power is reduced or exhaust smoke color is abnormal.
  - Do not run generator without air cleaner for causing engine accelerated wear.

a. Open the side door.
b. Loose the nut on filter cap, disconnect the cap.
c. Take out the air filter.
d. Clean the dirty on filter element, but detergent is not allowed.
e. Re-install the filter element, lock the cap and close the side door.

3. Fuel filter maintenance

A dirty fuel filter will restrict fuel flow to pump. To prevent it, service the fuel filter regularly.

- **WARNING**
  - Diesel is extremely flammable and is explosive under certain conditions.
  - Refuel in a well-ventilated area with the engine stopped. Do not smoke or allow flames or sparks in the area where the engine is refueled or where fuel is stored.
  - Do not overfill the fuel tank (there should be no fuel above the upper limit mark). After refueling, make sure the tank cap is closed properly and securely.
  - Be careful not to spill fuel when refueling. Spilled fuel or fuel vapor may ignite. If any fuel is spilled, make sure the area is dry before starting the engine.
  - Avoid repeated or prolonged contact with skin or breathing of vapor. KEEP OUT OF REACH OF CHILDREN

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2. Check the fuel level

Use automotive light diesel. If the fuel level is low, refuel the fuel tank until the level increased to the specified mark. Never use an oil/diesel mixture or dirty diesel. Avoid getting dirt, dust or water in the fuel tank. After refueling, tighten the oil rule securely.

- **CAUTION**
  - Do not use an oil/diesel mixture or dirty diesel.
  - Avoid getting dirt, dust or water in the fuel tank.
  - After refueling, make sure the tank cap is closed properly and securely.

- **WARNING**
  - Keep out of reach of children.

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- **CAUTION** For environment protection, we recommend that the waste oil should be kept in seal containers and send to the repair agency and recycling center. Do not drain the oil to the ground or rubbish.
a. Open side door, unscrew the dipstick.
b. Drain the dirty oil to a container
c. Refill the recommended oil to the oil filler level and check it
d. Screw the dipstick and close the side door

Oil capacity: KD186FGExi
Engine: 1.65 L.

3. Check the air cleaner
Check the air cleaner element to be sure it is clean and in good condition.
Open the right door, lose the nut and remove the cap to check the filter element.
Clean or replace the element if necessary.

CAUTION
Never run the engine without the air cleaner. Rapid engine wear will result from contaminants.

4. Check fuel filter
Check the fuel filter to be sure it is clean and in good condition. Open the left door,
check the filter element. Clean or replace the element if necessary.
8. MAINTENANCE

The purpose of the maintenance and adjustment schedule is to keep the generator in the best operating condition.

**WARNING**

- Shut off the engine before performing any maintenance. If the engine must be run, make sure the area is well ventilated. The exhaust contains poisonous carbon monoxide gas.

**CAUTION**

- Use genuine our parts or their equivalent. The use of replacement parts which are not of equivalent quality may damage the generator.

Maintenance Schedule

<table>
<thead>
<tr>
<th>Item</th>
<th>Each use</th>
<th>First month or 20 hours</th>
<th>Every 3 months or 50 hours</th>
<th>Every 6 months or 100 hours</th>
<th>Every year or 200 hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oil</td>
<td>Check</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Replace</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oil filter</td>
<td>Check and replace</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Air filter</td>
<td>Check</td>
<td></td>
<td></td>
<td></td>
<td>(2)</td>
</tr>
<tr>
<td>Nozzle pump</td>
<td>Clean adj</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Valve clearance</td>
<td>Check adj</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tank and filter</td>
<td>Clean or replace</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oil circuit</td>
<td>Check</td>
<td></td>
<td></td>
<td>Every 2 years(replace if necessary)</td>
<td></td>
</tr>
</tbody>
</table>

NOTE: (1) "O" means normal maintenance interval
(2) "O(2)" means generator used in dirty area. Please shorten the maintenance interval
(3) "O(3)" means maintenance and repair should taken by KIPOR dealer unless professionals are available. Please refer to the maintenance manual.

1. CHANGING OIL

Run generator for 3~5 minutes and stop it. Drain the oil quickly when the generator is heated.

**WARNING**

Ensure the generator is stopped before drainage.

5. STARTING THE GENERATOR

1. Before starting the genset, disconnect the load from the DC terminals. Ensure the breaker is kept at "OFF"

2. Turn the switch to the start position, then generator begins to preheat automatically. Loose it after all lamps lit, the switch returns to "ON", which means generator starts successfully. For start failure, please restart the generator after waiting for 10 minutes.
3. Turn the breaker to "ON", connect with the loads.

4. Instruction:
Engine can keep the rated power in standard ambient. If the ambient varies, please refer to GB/T6072.1 for power and fuel consumption.

7. STOPPING THE ENGINE
To stop the engine in an emergency, turn the engine switch to the OFF position.

IN NORMAL USE:
1. Turn the breaker to "OFF".
2. Switch off the connected equipment and pull the inserted plug.
3. Turn the engine switch to the OFF position.

⚠️ 注意
Turn the generator start switch to "OFF", cut off the battery power for a long while storage.
To prevent electrical shock from faulty appliances, the generator should be earthed. Connect a length of heavy wire between the generator's earth terminal and an external ground source.

Connections for standby power to a building's electrical system must be made by a qualified electrician and must comply with all applicable laws and electrical codes. Improper connections can allow electrical current from the generator to backfeed into the utility lines. Such backfeed may electrocute utility company workers or others who contact the lines during a power outage, and when utility power is restored, the generator may explode, burn, or cause fires in the building's electrical system.

Do not overload.
Do not exceed the current limit specified for any one receptacle.
Do not connect the generator to a household circuit. This could cause the damage to the generator or to electrical appliances in the house.
Do not modify or use the generator for other purposes than it is intended for. Also observe the following when using the generator.

A. Do not connect generators in parallel.
B. Do not connect an extension to the exhaust pipe.
C. When an extension cable is required, be sure to use a tough rubber sheathed flexible cable.
D. Limit length of extension cables: 60 m for cables if 1.5 mm²; 100m for cables of larger than 2.5 mm² and the current capacity within 5A/ mm².

6.3 Overload DC circuit may result in the protector tripping. In this condition, please disconnect DC load and press the reset key on control panel.

6.4 For electrical equipment, Large current will be generated when the motor driving system starts.

6. GENERATOR USE

WARNING

Battery is easily flammable and vaporized. Keep away from the spark and fire. Charge the battery in the place with good ventilation.
Electrolyte contains sulfuric acid which may burn the skin and eyes. Please wear mask and protective clothes.
(1) If the electrolyte splashes to skin, wash off by water at once
(2) If the electrolyte splashes to eyes, please wash it by water at least 15 minutes, then go to hospital quickly.
If electrolyte is swallowed, please drink much water and milk, magnesia or vegetable oil and go to hospital.
Please charge in the place out of the reach of children.
Keep the generator away from other electric cables or wires such as commercial power supply lines.
- DC receptacle is available for DC power
- The total power shouldn't exceed the sum of AC and DC power if AC and DC power are used at same time.
- For most equipment, the motor needs the power higher than rated value for starting

6.1 AC applications
1. Start the engine and make sure the output indicator light (green) comes on.
2. Confirm that the appliance to be used is switched off, and plug in the appliance.

**CAUTION**
- Overload indicator lamp (red) is on for a long while, generator may be damaged; although overload indicator lamp is on a short while, the generator service lift may still be shortened.
- Be sure that all appliances are in good working order before connecting them to the generator. If an appliance begins to operate abnormally, becomes sluggish, or stops suddenly, turn off the generator engine switch immediately. Then disconnect the appliance, and examine it for signs of malfunction.

6.2 Output and Overload Indicators
1. In normal condition, output indicator lamp (green) is on
   - Output indicator lamp (green)
   - Overload alarm lamp (red)
   - Low oil level alarm lamp (red)
   - Over speed alarm lamp (red)
2. If generator overloads (more than 5.5kVA), or loads have short circuit, output indicator lamp (green) will be off while overload lamp (red) will be on. At this time the current to loads will be cut off
   - Output indicator lamp (green)
   - Overload alarm lamp (red)
   - Low oil level alarm lamp (red)
   - Over speed alarm lamp (red)

**WARNING**
- If red lamp is on, stop the engine and find out the reason.
- Check the load condition before they are connected to the generator
- Red and green lamp may be on at the same time during generator starting. If red lamp is off after 4 seconds, it means the generator is in normal; if the red lamp still keeps on, please contact KIPOR dealer.

3. Low oil level alarm
This system is designed for protecting engine due to lackage of oil. It will stop the engine automatically if the oil level of crankshaft box is below the safe value. (generator switch still keeps in "ON" position). If customers restart the engine, the alarm lamp (red) will twinkle, and the engine can't be started. Please add the oil in this condition.

- Output indicator lamp (green)
- Overload alarm lamp (red)
- Low oil level alarm lamp (red)
- Over speed alarm lamp (red)

4. Over speed alarm
Generator will stop at once and alarm lamp will be on if engine is over speed for (0.5 ~ 3 seconds).

- Output indicator lamp (green)
- Overload alarm lamp (red)
- Low oil level alarm lamp (red)
- Over speed alarm lamp (red)

**WARNING**
- To avoid spark, please connect the charge cable to generator first, then connect the battery. During dismantling, remove the battery first.
- Do not confuse the + and - pole, or the generator and battery will be damaged.

**DANGER**
- For car battery charge application, disconnect the battery earth cable before connecting to the generator. During dismantling, disconnect the charge cable before earthing, which will prevent the short circuit and spark.
- Do not start the car if the generator still keep connecting with the car.