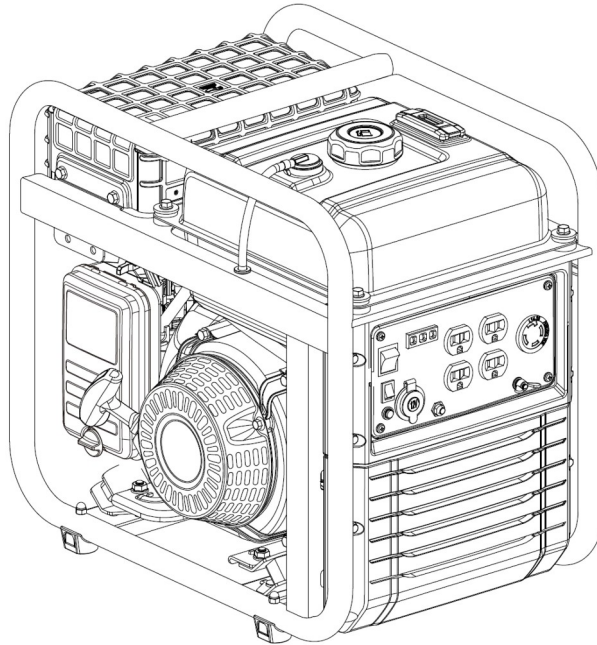


VARI®



ORIGINAL INSTRUCTIONS FOR USE

ECV 4600 W

OPEN FRAME INVERTER GENERATOR

INSTRUCTIONS FOR USE



Read this manual carefully before operation.
This manual includes important guidance for safety operation.

This Manual contains important safety information and instructions for operating this generating set. **PLEASE READ THIS MANUAL CAREFULLY.**

Failure to do so could result in property damage and/or personal INJURY/DEATH.

Provide this manual to any operator of this generating set. This manual should be considered as a permanent part of your generating set and should remain with it when you sell it.

All pictures & figures are only one example of series generating set. It shall be only for reference and perhaps there will be difference between pictures & figures and physical products.

All information in this publication is based on the latest product information available at the time of printing. We reserve the right to change, alter and/or improve the product and this document at any time without notice and without incurring any obligation.

No part of this publication shall be reproduced without written permission.

Write down the generating set's serial number and purchase information. Keep this manual and the receipt for future reference.

Model:

Serial number:

Date of purchase:

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I. Operator safety

1. Safety rules



Pay attention to this safety alert symbol. Obey all safety messages that followed by this symbol to avoid possible property damage. INJURY or DEATH.

Each safety message is preceded by a safety alert symbol and one of three words, DANGER, WARNING, or CAUTION.

DANGER

Indicates a hazardous situation which, if not strictly complied with, will result in substantial property damage, serious injury or DEATH.

WARNING

Indicates a hazardous situation which, if not strictly complied with, may result in property damage, serious injury or DEATH.

CAUTION

Indicates a hazardous situation which, if not strictly complied with, could result in property damage or injury.



WARNING

READ THIS MANUAL COMPLETELY BEFORE OPERATING.

DO NOT operate this generating set until you have read ALL safety, Operation, and maintenance instructions listed in this manual.

Failure to follow the instructions may result in property damage, INJURY or DEATH.

The warnings and precautions discussed in this manual cannot cover all possible conditions and situations that may occur. It must be understood by the operator that common sense and caution are factors which cannot be built into this product, but must be possessed by the operator.

WARNING

This generating set is intended for residential consumer use only.

Air cooled generating sets cannot be run full time.

No personal-modified any part of the generating set or any unsuitable usage is allowed.



⚠ DANGER

TOXIC FUMES

The exhaust of the engine contains carbon monoxide, an odorless, colorless, poison gas. Using engine indoors **CAN KILL YOU!**

NEVER use inside any building or any kind of enclosure, **EVEN IF** doors and windows are open.

Place the engine in a well-ventilated area and carefully consider wind and air currents when positioning the engine.



⚠ WARNING

FIRE

Operation of this engine may create sparks that can start fires around dry vegetation.

This engine may not be equipped with a spark arresting muffler. If the engine will be used around flammable materials, or on land covered with materials such as agricultural crops, forest, brush, grass, or other similar items, then an approved spark arrester must be installed.

In some area, a spark arrester is required by law.

Please contact local fire agencies for laws or regulations relating to fire prevention requirements.



⚠ DANGER

FIRE OR EXPLOSION

Gasoline is highly flammable and extremely explosive.

Fire or explosion can cause severe burns or death.

Keep flammable items away while handling gasoline.

Fill fuel tank outdoors and in a well-ventilated area with the engine stopped.

Always wipe off spilled fuel and wait until the fuel has dried before starting the engine.

DO NOT operate the engine with known leaks in the fuel system.

Use proper fuel storage and handling procedures.

DO NOT store fuel or other flammable materials nearby.

Empty the fuel tank before storing or transporting this engine.

Keep fire extinguisher handy and a be prepared if a fire starts.



⚠ WARNING

KICKBACK

Rapid retraction of the starter cord will pull hand and arm towards the engine faster than you can let go.

Unintentional startup can result in accident.



WARNING

HOT SURFACE

Running engine generators produce heat. Severe burns can occur on contact.

DO NOT touch engine while operating or just after stopping. Avoid contact with hot exhaust gases.

Maintain at least three feet of clearance on all sides to ensure adequate cooling.

Combustible material can catch fire on contact.

Maintain at least five feet of clearance from combustible materials.



DANGER

MOVING PARTS

Moving parts can cause severe injury. Keep hands and feet away.

DO NOT operate engine with covers, shrouds, or guards removed.

DO NOT wear loose-fitting clothing, dangling drawstrings or items that could become caught. Tie up long hair and remove jewelry.

The moving parts may catch operator's hand, feet, hair or clothes that will cause traumatic amputation or broken bones, fracture.

NEVER place fingers, hands, or body near the engine when it is running.

WARNING

ACID

Be careful when using any battery.

Keep away from flame, heat or spark.

Battery will exhaust hydrogen while charging.

Only charge a battery in a well-ventilated place.

Avoid spilled battery acid. If acid liquid contact with skin, wash immediately with clean water.

WARNING

Before each use, check for loose or damaged parts, signs of oil or fuel leaks, and any other condition that may affect proper operation.

Repair or replace all damaged or defective parts immediately.

Locate all operating controls and safety labels.

Make sure all the safety instructions are in right and working condition. Operate only on level surfaces.

DO NOT expose generating set to excessive moisture, dust, or dirt.

Keep all safety guards in place and in proper working order at all times.

DO NOT allow any material to block the cooling slots.

DO NOT allow children or untrained persons to operate the generating set.

DO NOT run the generating set unattended. Turn off the generating set before leaving the area.



⚠ DANGER

ELECTRIC SHOCK

This generating set produces powerful voltage and the electricity **CAN KILL YOU**.

This is generating set must be properly connected to an appropriate ground to help prevent electric shock.

Failure to properly ground generating set can result in electrocution, especially if the generating set is equipped with a wheel kit.

Consult an electrician for local grounding requirements.

Installation should be performed by a certified electrician.

Improper Installation can result in electric shock and death.

To reduce the risk of electric shock. DO NOT use electrical cords that are worn, frayed, bare or otherwise damaged.

DO NOT touch bare wires or receptacles.

DO NOT operate generating set in wet weather. Keep the generating set dry.

DO NOT handle generating set or electrical cords while standing in water, while barefoot, or while hands or feet are wet.

Keep children or pets away from the generating set.

DO NOT hook up any generating set to a building's electrical system without the proper use and installation of a transfer switch installed by a qualified electrician.

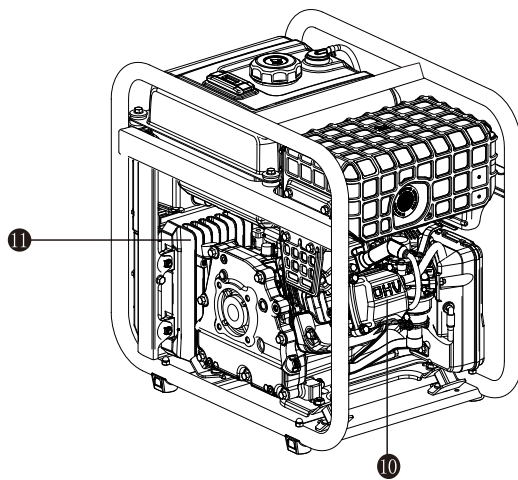
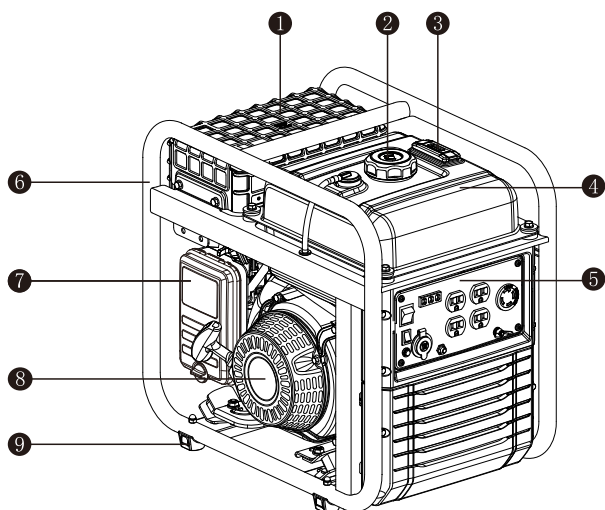
When using generating set for backup power, notify utility company. Use approved transfer generating set to isolate generating set from electric utility.

Failure to isolate generating set from power utility can result in death or injury to electric utility workers due to backfeed of electrical energy.

⚠ WARNING

Lithium battery is maintenance free, if you have any question, please contact a local authorized dealer.

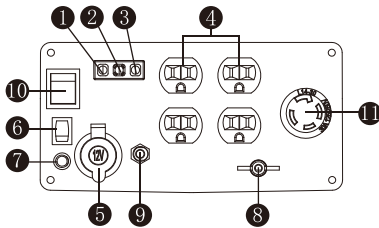
II. Features and controls (applicable model)



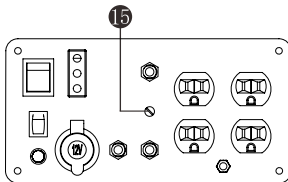
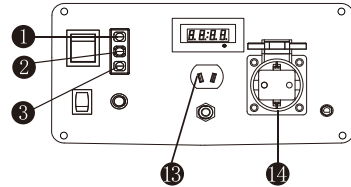
- | | | |
|------------------------|------------------|------------|
| ① Muffler | ⑥ Rack | ⑪ Inverter |
| ② Fuel cap | ⑦ Air filter | |
| ③ Fuel level indicator | ⑧ Starter | |
| ④ Fuel tank | ⑨ Supporting leg | |
| ⑤ Control panel | ⑩ Valve cover | |

Control Panel

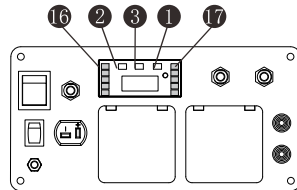
BPB4500/BPB5000 recoil start



BPB4000E
Electric start



Dual-frequency
manual start

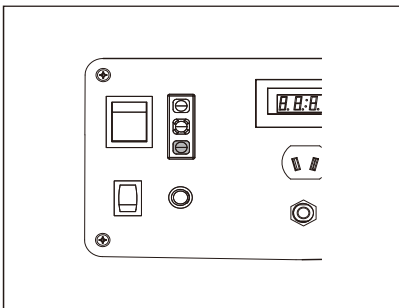


Multi-function display
(if equipped)

- | | | |
|------------------------|---------------------------------------|-----------------------------|
| ① Oil alarm lamp | ② Overload indicator | ③ Running indicator |
| ④ AC output receptacle | ⑤ 12V DC | ⑥ Energy-saving switch |
| ⑦ Reset button | ⑧ Ground terminal | ⑨ Overcurrent protector |
| ⑩ Engine Switch | ⑪ American-type quadruplex receptacle | ⑫ VFT |
| ⑬ V-type DC output | ⑭ Euro- receptacle | ⑮ Frequency transfer switch |
| ⑯ Load indicator | ⑰ Fuel level indicator(if equipped) | |

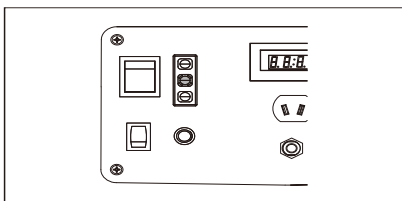
Running indicator (green)

The running indicator lights up when generating set starts and has normal output.



Overload indicator (red)

When the overload indicator is on, it indicates that the generating set is overload and it may cause overheat of frequency converter, or increase of AC voltage. And then the AC protector works. It will stop the output of generating set to protect the electric equipment and the generating set itself. At this time, the running indicator (green) is off and the overload indicator (red) is on, but the engine is still in running state.

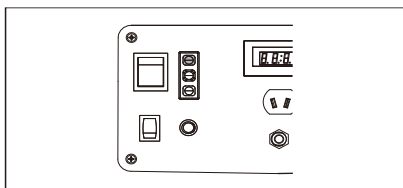


When the generating set has no output and the overload indicator is on, please take the following steps:

1. Lower the total power of the connected electric devices to the rated output range of generating set.
2. Check the air intake for impurities and check the control parts for abnormal situation. Handle immediately if necessary.
3. Press the reset button.

Oil alarm lamp (yellow)

When the oil level drops below the lower limit, the oil protection system will stop the engine automatically and oil alarming lamp will blink by pulling the recoil starter. The engine will not run until the oil has been filled to the proper level.



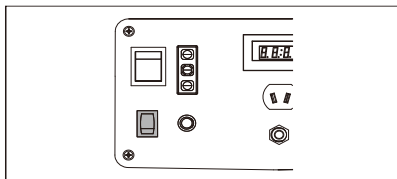
Note: If engine flames out or fails to start, Please adjust Engine switch to “ON” position and then pull the recoil starter. If the oil alarming lamp lights up, it shows lack of oil. Please add appropriate oil and restart the engine.

Energy-saving switch

When the energy-saving switch is in “ON” position, the energy saving equipment controls the engine rotate speed according to the connected loads. There will be good fuel consumption and low noise.

When the energy-saving switch is in “OFF” position, the engine will always run in rated rotate speed no matter it is connected to the loads or not (See the parameter table for details).

Note: Please set the energy-saving switch to “OFF” position when connect to air compressor, sinking pump etc. because these equipments need large starting current.



III. Operating

1. Operating checklist

1 Operating Location

Only use OUTSIDE and place the generating set in a well-ventilated area.

Only operate the generating set on a flat, level surface and in a clean, dry operating environment.

Only use the generator in applicable scope. If you have any question on the applicable scope of the product, please consult local distributor.

In special location and region, use of the generator may meet some additional provision or regulations and please consult the local distributor.



⚠ DANGER

TOXIC FUMES

The exhaust of the generating set contains carbon monoxide, Using engine indoors **CAN KILL YOU!**

NEVER use inside any building or any kind of enclosure, **EVEN IF** doors and windows are open.

Place the generating set in a well-ventilated and clean area. Note the wind direction and air current when place the engine.

High altitude

This generating set may require a high altitude carburetor kit to ensure correct operation at high altitudes. Consult the authorized local dealer for high altitude kit information if you always operate your engine at altitudes above 5,000 feet (1,500 meters).

⚠ CAUTION

Even with carburetor modification, generating set horsepower will decrease about 3.5% for each 1,000 feet (300 meters) increase in altitude. The effect of altitude on horsepower will be greater than this if no carburetor modification is made.

⚠ CAUTION

Operation the engine at altitude below 5,000 feet (1,500 meters) with modified carburetor may cause the generating set to overheat and result in serious engine damage. Please restore factory specifications of the carburetor at the dealer when using the engine in a low altitude area.

2 Operating Condition

Check for loose or damaged parts, signs of oil or fuel leaks, and any other condition that may affect proper operation. Repair or replace all damaged or defective parts immediately.

⚠ WARNING

Failing to correct problem(s) before operation could result in property damage, serious injury or DEATH.

Remove any excessive dirt or debris, especially around the muffler and recoil starter.

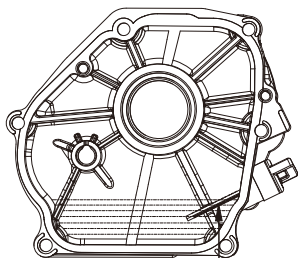
DO NOT move or tip the generator during operation.

3 Engine oil

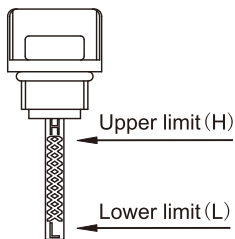
Place the engine on a level surface with engine stopped.

Remove the dipstick and wipe it clean.

Reinstall dipstick into tube; rest on oil fill neck, DO NOT thread cap into tube.



Dipstick



Remove the dipstick again and check oil level. Level should be within the upper limit and lower limit range on dipstick.

Fill to the upper limit (marked with "H") of the dipstick with the recommended oil if the oil level is low.

Reinstall and fully tighten the dipstick.

Refer to **add oil** instruction in **MAINTENANCE** section for more information.

Oil capacity (rated):
See parameters.

⚠ WARNING

Oil is a major factor affecting performance and service life. Use 4-stroke automotive detergent oil recommended in the **MAINTENANCE** section of this manual.

WARNING

This engine is not filled with oil at the factory. Any attempt to crank or start the engine before it has been properly filled with the recommended type and amount of oil may result in engine damage and void your warranty.

CAUTION

Operate generator only on level surfaces. The engine is equipped with a low oil sensor (applicable types) that will automatic stop the engine when the oil level falls below the safe limit. To avoid the inconvenient of an unexpected shutdown, fill to the upper limit and check the oil level regularly.

4 Engine fuel

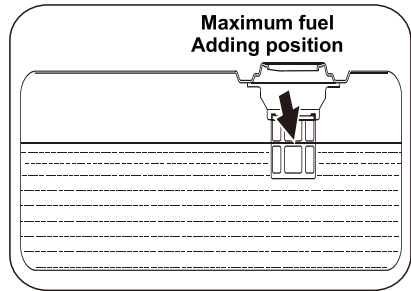
With the engine stopped, check the fuel level gauge. Refill the fuel tank if necessary.

Use clean, fresh, regular unleaded gasoline.

DO NOT mix oil with gasoline.
Always wipe up any spilled fuel.

Be sure not to fill above the upper limit mark. Always allow room for fuel expansion.

Fuel capacity (rated):
See parameters.



DANGER

Do not fill the fuel tank above the upper limit. Over fill will results in engine die or damage the carbon canister (if equipped) and void your warranty.



DANGER

FIRE OR EXPLOSION

Gasoline is highly flammable and extremely explosive.

Keep flammable items away while handling gasoline.

Fill fuel tank outdoors and in a well-ventilated area with the generator stopped.

Always wipe off spilled fuel and wait until the fuel has dried before starting the generator.

NEVER use engine or carburetor cleaner products in the fuel tank or permanent damage may occur.

It is important to prevent gum deposits from forming in essential fuel system parts,

such as the carburetor, fuel filter, fuel hose or tank during storage. Also, experience indicates that alcohol-blended fuels (called gasohol, ethanol or methanol) can attract moisture, which leads to separation and formation of acids during storage.

Acidic fuel can damage the fuel system of the generating set while in storage. Be sure to review the instructions given in "Storage" section.

Gasoline/Alcohol Blends: up to 10% alcohol, 90% unleaded gasoline by volume is approved as a fuel. Other gasoline/alcohol blends are not approved.

Effects of old, stale or contaminated fuel are not warrantable.

CAUTION

To minimize gum deposits in your fuel system and to insure easy starting, do not use gasoline left over from the previous season.

CAUTION

Pressure can build up in the fuel tank. Allow the generator to cool for at least two minutes before removing fuel cap. Loosen the fuel cap slowly to relieve any pressure in the tank.

5 Electrical devices

Disconnect all electrical devices from the generator and switch off the AC circuit breaker before start the engine.

The generator may be hard to start with electrical devices.

The connected electrical equipment must not exceed the maximum limit of the generator. Please refer to the specification table for details.

6 Grounding

The generator must be properly connected to an appropriate ground. It helps prevent electrical shock if a ground fault condition exists in the generator or in connected electrical devices, especially when the unit is equipped with a wheel kit. Proper grounding also helps dissipate static electricity, which often builds up in ungrounded devices.



⚠ DANGER

Electrical Shock

Failure to properly ground the generator can result in electric shock.

A ground terminal on the frame of the generator has been provided on the generator end. For remote grounding, connect a length of heavy gauge (4 mm²) copper wire between the generator ground terminal and a copper rod driven into the ground.

The National Electrical Code requires that the frame and external electrically conductive parts of this generator be properly connected to an approved earth ground. Local electrical codes may also require proper grounding of the unit. We strongly recommend that you consult with a qualified electrician for grounding requirements in your area.

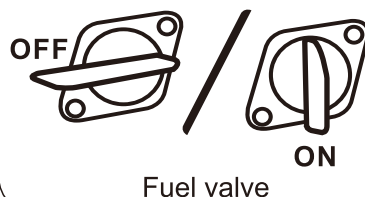
2. Starting the engine

1

Perform operating checklist.

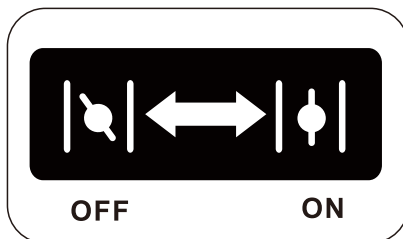
2

Turn fuel valve to the “**ON**” position.



3

Pull the choke valve switch to “**OFF**” position.



When in cold engine status, turn the choke valve to “**OFF**” position, or turn it to “half-open” position when in hot engine status. When fail to start the engine for twice, fully open the choke then operate the switch or recoil.

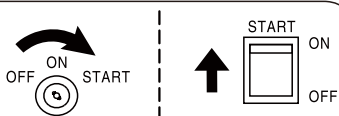
CAUTION

Choke plate should be setting in different width due to temperature and other factors.

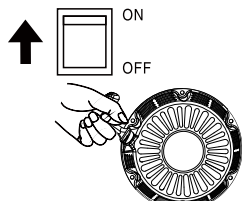
4

Electric start: Turn and keep the key to “**START**” position till the engine is started. After the engine is started, release the key to return to “**RUN**” position

Manual start: Turn the switch to “**RUN**” position. and then seize the starter handle and slow pulling until there is a sense of resistance so far, and quickly pull to start



Electric start



Manual start



WARNING

KICKBACK

Rapid retraction of the starter cord will pull hand and arm towards the engine faster than you can let go.

Unintentional startup can result in entanglement, traumatic amputation or laceration. Broken bones, fractures, bruises or sprains.

If the starter fails to start the engine, immediately turn “**OFF**” the starter. Don’t attempt to restart the engine before the failure cause is identified. Don’t restart the engine by replacement of other storage battery without authorization.

CAUTION

If the engine fails to start after attempt for 3 times or flames out after starting, inspect and ensure that the generator is placed in horizontal surface and enough engine oil is injected.

During starting, don’t keep the starting switch to “start” position for more than 5s, otherwise it is possible to damage the motor. If the unit fails to start within first time, restart after

about 10s. After the unit is used for a period, if the starting speed of the motor falls, please replace the storage battery.

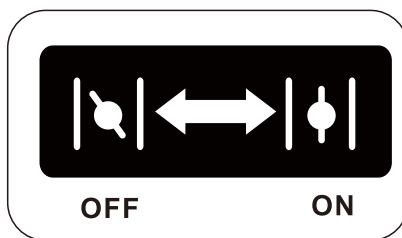
During the operation of the unit, the storage battery supplies power for the solenoid valve of the carburetor. For this, when the unit is turned off, make sure that the starting switch is in **"OFF"** position, otherwise the storage battery voltage is reduced due to the operating solenoid valve of the carburetor, impacting on starting for next time.

If the engine is equipped with an engine oil alarm, it is possible to prevent engine start when the engine oil in the crankcase is lower than the minimum level.

During running-in, routinely inspect the engine oil. See maintenance section for recommended maintenance period.

5

When starting, slowly turn choke lever to **"ON"** position as temperature rises. If engine runs unstable(with shake), shift the lever to "half-open" position until the engine runs stable before rest the lever to **"ON"** position.



⚠ WARNING

During the engine warm up, partly open for the choke is necessary until the temperature to a certain level.

6

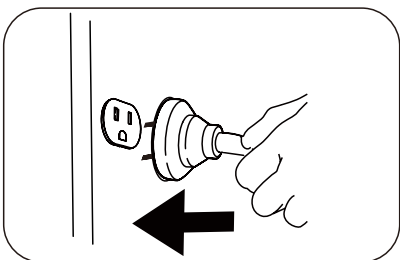
The generator may be normally loaded.

⚠ WARNING

Connect the output terminal of the generator with the electric equipment. Don't start or stop the engine when the electric equipment is in **"ON"** status.

3. Connect to Electrical Devices

Inspect power cord for damage before using. There is a hazard of electrical shock from crushing, cutting or heat damage.



⚠ DANGER

ELECTRICAL SHOCK

To reduce the risk of electrical shock, **DO NOT** use electrical cords that are worn, frayed, bare or otherwise damaged.

DO NOT touch bare wires or receptacles.

DO NOT handle generator or electrical cords while standing in water, while barefoot, or while hands or feet are wet.

1. Allow the engine to stabilize and warm up for a few minutes after starting.
2. Make sure the electrical devices in “**OFF**” position. and the load current is not higher than the maximum withstanding current of single socket.

⚠ CAUTION

If the current of single load is higher than the maximum withstanding current of single socket, please connect the load with the terminal.

Bearing capacity

⚠ WARNING

DO NOT overload the generator.

Exceeding the generator's capacity can damage the generator and/or electrical devices connected to it.

You must make sure your generator can supply enough rated (running) and surge (starting) watts for the electrical devices you will power at the same time. Follow these simple steps to calculate the running and starting watts necessary for your purposes.

1. Select the electrical devices you will power at the same time.
2. The amount of power you need to run all the devices is the total rated (running) watts of these items.
3. Identify how many surge (starting) watts you will need. Surge wattage is the short burst of power needed to start electric motor-driven tools or appliances such as a circular saw or refrigerator. Because not all motors start at the same time, total surge watts can be estimated by adding only the electrical device(s) with the highest additional surge watts to the total rated watts from step 2.

Wattage Reference Chart

Electric equipment		Rate power(W)	Starting power(W)
Appliances	Tablet computer27"	80	100
	Energy saving lamp	5-50	5-50
	Electric cooker	1000	1000
	Computer	250	250
	Electric fan	50	100
	Washing machine	250	500
	Refrigerator	50	300
	Air-conditioner	1600	3200
Electric tooling	Electric hammer	1000	1500
	Impact Hammer	3000	6000
	Water pump	2200	5000
	Electric welding machine	5000	7500
	Air compressor	5000	10000

WARNING

You must isolate the generator from electric utility by opening the electrical system's main circuit breaker or main switch if the generator is used for backup power. Failure to isolate the generator from the power utility may result in injury or death to electric utility workers and damage to the generator due to backfeed of electrical energy.

4.Lithium-ion battery

The lithium battery on the generator is strictly prohibited from being used for other purposes. If the generator is malfunctioning due to the battery,

please contact the dealer or a qualified professional for service.

Charging

When there is no current in the lithium battery, start the generator with recoil. The lithium battery is in a state of charge while the generator is running.

Temperature

Ambient temperature:-10°C-60°C

Operation temperature:0°C-40°C

Maintenance

Disconnect the battery if you do not intend to use the unit for a long time to prevent battery leakage.

Regularly check that the battery post is clean and the connection is secure.

When storage, please charge in time if the voltage is lower than 12.8V.

WARNING

Smoking, open flames, sparks or any other source of heat around lithium battery are prohibited. Wear protective goggles, rubber aprons and rubber gloves when working around a lithium battery.

The lithium battery contains a highly corrosive electrolyte that can cause severe corrosive burns. If leakage occurs, wash the area with clean water immediately.

5. Stopping the engine

1

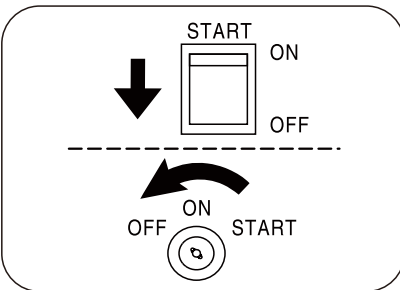
Remove all the load on generator.

2

Allow the generator run at no load for a few minutes to stabilize internal temperatures of the engine and generator.

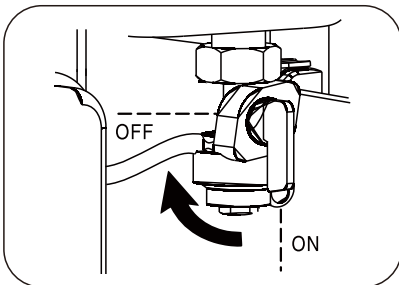
3

Turn off the flameout switch (turn the engine switch to “OFF” position).



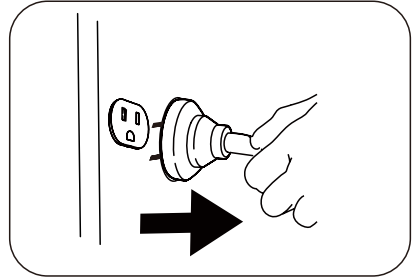
4

Turn the fuel valve to “OFF” position.



5

Remove the plug of all electric equipment from the generator panel.



⚠ WARNING

NEVER stop the engine with electrical devices connected and with the connected devices turned “ON”.

6. Parallel operation

(If applicable)

Make sure that the generating set is in a good running state before connecting it to other generating sets. The total power of electric devices should not exceed rated power of generating set.

When electric motor starts, the overload indicator (red) will light up and normally it will stop within 4 seconds. If it cannot stop, please consult your local dealer.

During parallel operation, energy-saving switches of generating sets should be in the same position.

1

Connect one generating set to other generating set(s) in parallel. Use the parallel kit to make the parallel connection (the parallel kit needs to be purchased separately).

2

Start the engine in proper order and make sure that the running indicator (green) is normal.

3

Connect the plug of electric devices to the AC receptacle of parallel kit.

4

Run the electric devices.

CAUTION



When overload too much, overload indicator (red) blinks continuously, and the generating set may be damaged. When overload a little, overload indicator (red) lights up continuously, it may shorten the service life of generating set.

When continuously operating the generating set, power cannot exceed the rated power of generating set.

The total power of electric devices cannot exceed the rated power of generating set. The manufacturers of electric devices or tools always list the rated power of similar models or serial number.

IV. Maintenance

It is the operator's responsibility to complete all scheduled maintenance in a timely manner. Correct any issue before operating the generator. Always follow the inspection and maintenance recommendations and schedules in this manual.

**⚠ DANGER**

Accidental starts can cause severe injury or death. Remove and ground spark plug wire before performing any service.

⚠ WARNING

Improper maintenance or failure to correct a problem before operation can cause a malfunction and result in property damage, serious injury or DEATH.

Improper maintenance will void your warranty.

⚠ CAUTION

The filter element may contain PAHs, PAHs are harmful for your health. Please wear gloves for protection during air filter maintenance.

1. Maintenance schedule

Before servicing the generator, **stop the generator**, disconnect all electric devices and battery (if equipped) and allow the generator to cool down.

Follow the service intervals indicated in the chart below. Service your generator more frequently when operating in adverse conditions.

Contact your local service dealer for your generator or engine maintenance needs.

		Each time before use	10 hours or the first month ^{Note2}	50 hours or every three months ^{Note2}	100 hours or every six months ^{Note2}	300 hours or every year ^{Note2}
Engine oil	Inspection	√				
	Replacement		√		√	
Air filter	Inspection	√				
	Cleaning			√ ^{Note3}		
Spark plug	Inspection and adjustment				√	
	Replacement					√
Spark Arrester ^{Note1}	Cleaning				√	
Idle speed	Inspection and adjustment					√ ^{Note4}
Valve clearance	Inspection and adjustment					√ ^{Note4}
Low permeability oil tube ^{Note1}	Inspection	Every two years ^{Note4}				
Oil tube	Inspection	Every two years ^{Note4}				

Note1: Applicable types (if available).

Note2: Before each season and after then (whichever comes first).

Note3: Service more frequently under severe, dusty, dirty conditions.

Note4: To be performed by knowledgeable, experienced owners or the authorized dealer.

2. Generator maintenance

Make certain that the generator is kept clean and stored properly.

Use a damp cloth to clean exterior surfaces of the generator.

Use an compressed air (25 PSI) to clear dirt and debris from the generator.

Inspect all air vents and cooling slots to ensure that they are clean and unobstructed.

WARNING

DO NOT use water to clean the generator. Water can enter the generator through the cooling slots and damage the generator windings.

WARNING

DO NOT modify the generator in any way.

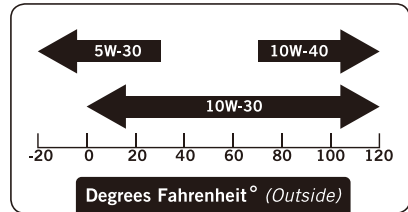
DO NOT tamper with governed speed. Generator supplies correct rated frequency and voltage when running at factory set.

Tampering with the factory set governor will void your warranty.

3. Engine maintenance

Engine Oil

SAE 10W-30 is recommended for general, all-temperature use. Other viscosities shown in the chart may be used when the average temperature in your area is within the indicated range.

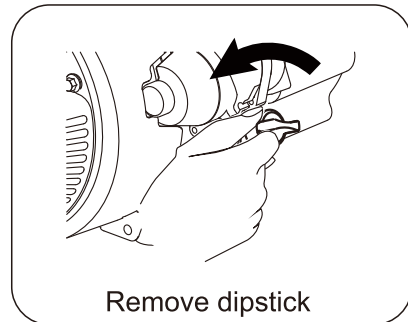


Ambient temperature

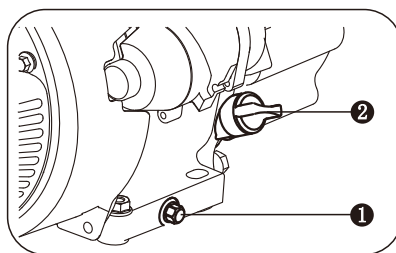
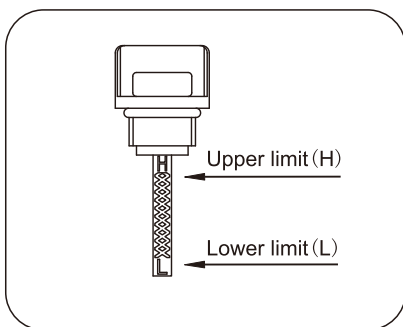
Oil capacity (rated):
see parameters.

Add oil

1. Place the engine on a level surface.
2. Remove the dipstick and wipe it clean.



3. Add recommended oil to the upper limit.



① Oil drain plug ② Dipstick

⚠ CAUTION

Oil level check

Reinstall dipstick into tube; rest on oil fill neck, DO NOT thread cap into tube.

4. Fully tighten the dipstick.
5. Dispose of used oil at an approved waste management facility.

Change oil

⚠ CAUTION

Change the oil when in hot engine state. The oil can reach up to 140 °C under that condition. Careful operation should be taken to prevent burns.

1. Place the engine on a level surface.
2. Clean area around dipstick and drain plug.
3. Remove the oil drain plug and allow the oil to drain completely.

4. Tightening the drain bolts.

5. Remove oil dipstick.

6. Add recommended oil to the upper limit (see add oil instruction above).

7. Reinstall and fully tighten the dipstick.

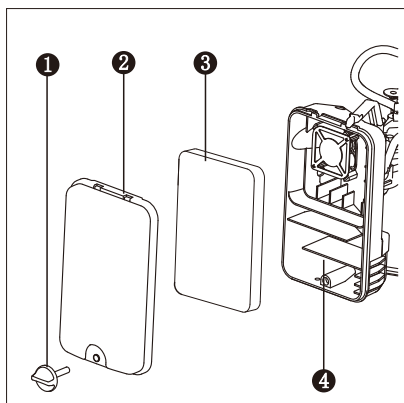
8. Dispose of used oil at an approved waste management facility.

⚠ WARNING

The engine is not filled with oil at the factory. Any operation before it has been properly filled with the recommended type and amount of oil may result in engine damage and void your warranty.

Air filter

1. Loosen the filter fix bolt and remove the cover of the air filter.



- ❶ Filter fix bolt
- ❷ Air filter cover
- ❸ Foam filter element
- ❹ Air filter body

2. Remove the foam filter element.
3. Wash in liquid detergent and warm water.
4. Squeeze thoroughly dry in a clean cloth.
5. Saturate in clean engine oil.
6. Squeeze in a clean, absorbent cloth to remove all excess oil.
7. Place the filter in the assembly.
8. Fasten the air filter cover with the fix bolt, and the mounting it back to the air filter body.

⚠ WARNING

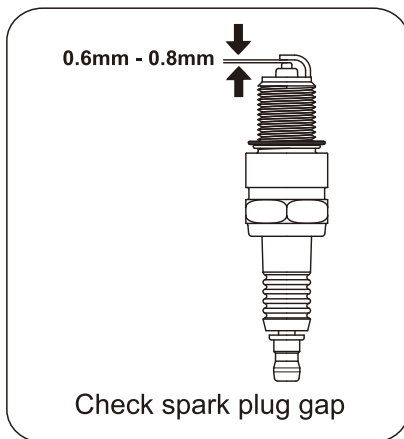
DO NOT run the engine without the air filter, serious danger can result.

Spark plug

1. Clean any dirt from the spark plug cap and spark plug base.
2. Remove the spark plug cap.
3. Using socket wrench to loose and remove the spark plug.
4. Inspect the spark plug and spark plug washer, if it's damaged or worn, replace with new one. Clean the spark plug with wire brush if reuse it.
5. Check spark plug gap. Carefully bend side electrode to adjust the gap if necessary.

Spark plug gap:

0.6mm - 0.8mm



6. Carefully thread the plug into the engine **by hand**.
7. After the spark plug is seated, use spark plug wrench to tighten the plug.

Spark Plug tighten Torque:
15-20N.m

8. Attach the spark plug wire to the plug.

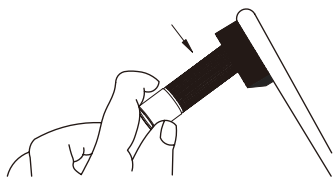
⚠ WARNING

Only use recommended spark plug or equivalent. **DO NOT** use spark plugs that have improper heat range.

Spark Arrester

(Applicable types)

1. Allow the engine to cool completely before servicing the spark arrester.
2. Remove the two bolt holding the cover plate which retains the end of the spark arrester to the muffler.
3. Remove the spark arrester screen.
4. Carefully remove the carbon deposits from the spark arrester screen with a wire brush.



Clean carbon deposits

5. Replace the spark arrester if it is damaged.

6. Reinstall the spark arrester in the muffler and attach with the two screws.

Speed

The speed has been pre-set at the factory and should rarely require readjustment. Consult your local authorized dealer for such needs.

⚠ WARNING

Unapproved adjustment will damage your engine and/or your electrical devices and void your warranty.

Adjustment

There has no other service and/or adjustment need for your generator.

Unapproved adjustments or tampering can damage your generator and your electrical devices and will void your warranty. Contact your local dealer for such needs.

⚠ WARNING

Tampering with the factory set governor will damage your generator and void your warranty.

V. Trouble-shooting

Failure	Cause	Removal method
Engine won't start.	Engine switch is "OFF".	Turn engine switch to the "ON" position.
	No Fuel.	Fill tank per instructions in this manual.
	Inadequate engine oil.	Check oil level. This engine is equipped with a low oil sensor. The engine cannot be started unless the oil level is above the prescribed lower limit.
	No ignition.	Remove the spark plug cap. Clean any dirt from around the plug base, then remove the spark plug. Install the spark plug in the plug cap. Turn the engine switch "ON". Grounding the electrode to any engine ground, pull the recoil starter to see if sparks jump across the gap. If there is no spark, replace the plug. Reinstall the plug and start engine according to instructions in this manual. Consult Customer Service if necessary.
Generator has no output.	Overload protection	Disconnect the load and push the reset button.
	Inadequate cord sets or extension cords.	Check cord sets or extension cords capabilities in section Controls; Cable Size in this manual. Consult Customer Service if necessary.

VI. Storage and transportation

Storage

The generating set should be started at least once every two weeks and allowed to run for at least 20 minutes. Follow the instructions below for longer term storage if the generating set will be out of service for 2 months or more.



⚠ DANGER

Fire or explosion

Gasoline is highly flammable and extremely explosive. Empty the fuel tank and shut off fuel valve before storing or transporting this generating set.

1. Allow the generating set to cool completely before storage.
2. Clean the generating set according to the instructions in the Maintenance section.
3. Drain all fuel completely from the fuel hose and carburetor to prevent gum from forming.
4. Turn off the fuel supply at the fuel valve.
5. Change the oil.
6. Remove the spark plug and pour about 15 ml of oil into the cylinder. Crank the engine slowly to distribute the oil and lubricate

the cylinder.

Reattach the spark plug.

8. Store the unit in a clean, dry area out of direct sunlight.

Transportation

To prevent fuel spillage when transporting or during temporary storage, the generating set should be secured upright in its normal operating position, with the engine switch OFF. The fuel valve lever should be turned OFF.

⚠ WARNING

When transporting:

Do not overfill the tank.
Do not operate the generating set while it is on vehicle. Take the generating set off the vehicle and use it in a well-ventilated place. Avoid a place exposed to direct sunlight when putting the generating set on a vehicle. If the generating set is left in an enclosed vehicle for many hours, high temperature inside 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 generating set on board. If you must transport the generating set on a rough road, drain the fuel from the generating set beforehand.

VII. Specification

1. Specifications(single phase)

Feature \ Model		BPB4000(E)		BPB4500(E)	
Engine parameter	Engine model	GB225		GB270B(E)-2	
	Style	OHV, forced cooling, four stroke, single cylinder			
	Displacement (cm ³)	224		272	
	Ignition system	TCI		TCI	
	Start style	recoil start or electric starting			
	Oil capacity(L)	0.6		1.0	
	Series parameter	Voltage(V)	230/240	110/220/ 120(120/240)	230
Frequency(Hz)		50	60	50	60
Rated power(kW)		3.5	3.5	4.2	4.2
Maximum power(kW)		3.8	3.8	4.6	4.6
Power factor		1.0		1.0	
Insulation rate		F		F	
Fuel capacity(L)		9.6		9.6	
operating temperature(°C)		-5-40		-5-40	
Max. site altitude of installation(m)		1500		1500	
Measured sound pressure level(dB(A))		≤76		≤76	
Measurement uncertainty(dB(A))		≤1.5		≤1.5	
Guaranteed sound power level(dB(A))		≤97		≤97	
Net weight(kg)		BPB4000: 33 BPB4000E: 34		BPB4500: 38 BPB4500E: 39	

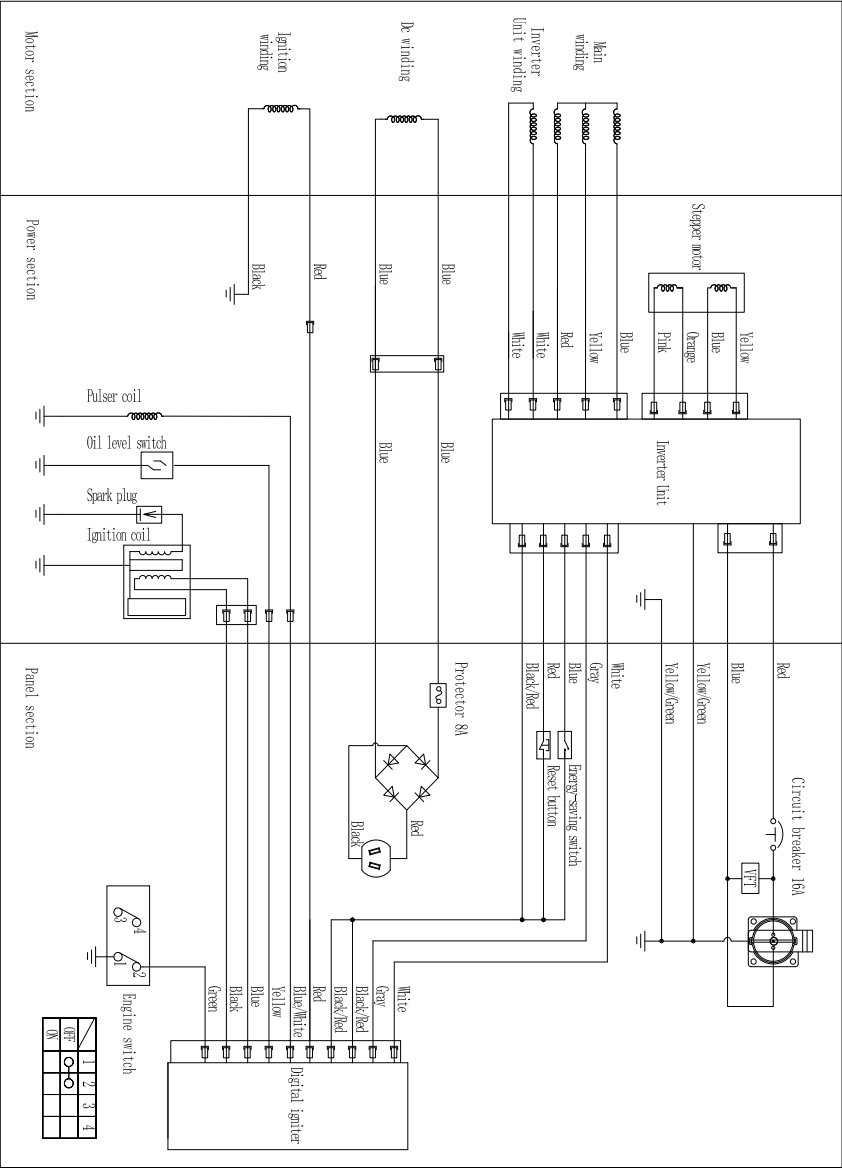
The air-fuel ratio will be more rich in higher altitude area, which will led to lower performance of engine, and higher consuming of fuel.

The output of generator should be measured according to the real operation condition such as temperature, pressure and humidity etc.

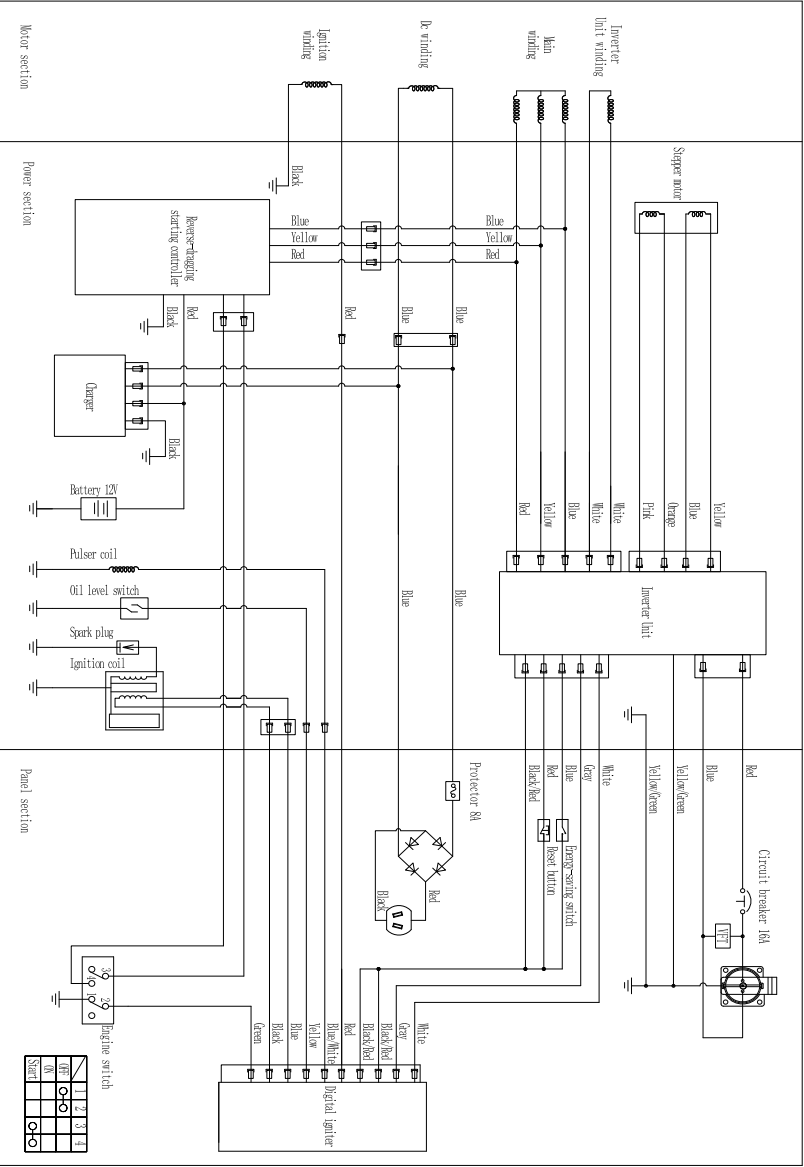
Notes: The generating set with different specification and configurations may have different parameters and may change at any time without notice. Please consult the local dealer for detailed information.

2. Wiring Diagram

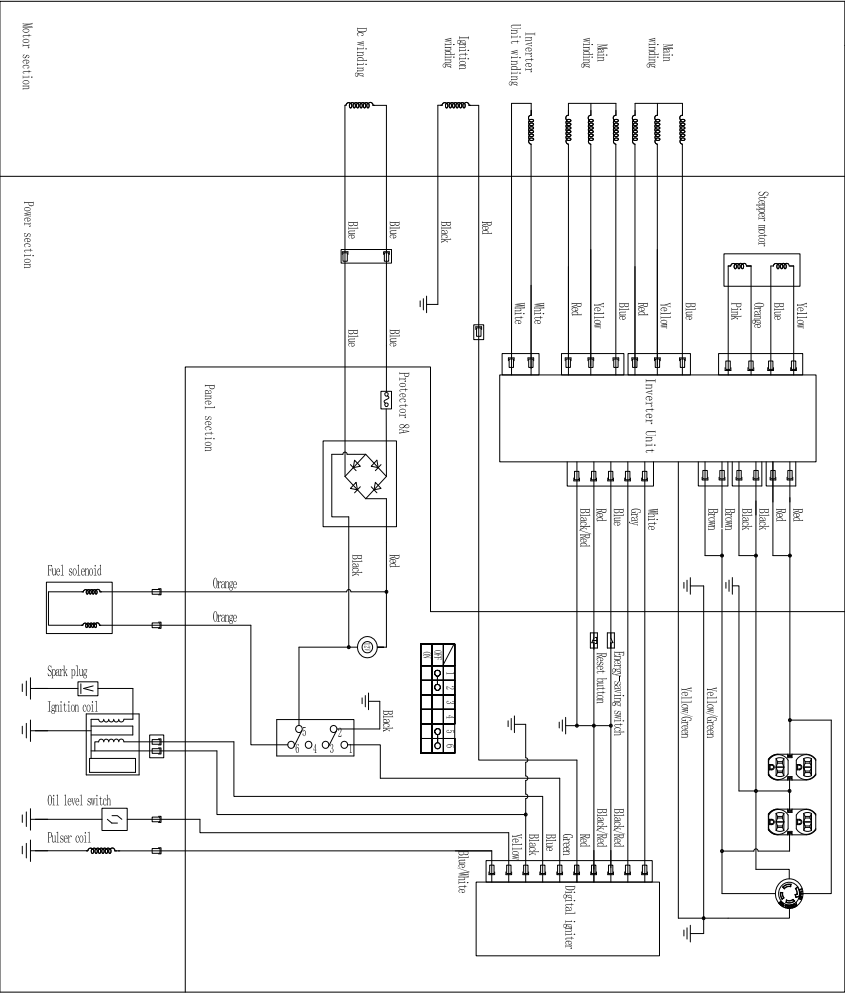
BPB4000 recoil start



BPB4000 electric start



BPB4500 recoil start



The diagram illustrates the electrical system for a 12V DC motor, divided into three main sections: Motor section, Power section, and Inverter section.

Motor section: This section includes the Super motor, Inverter unit, and Inverter unit winding. The Super motor has terminals for Yellow, Blue, Orange, and Pink. The Inverter unit has terminals for Blue, Yellow, Red, Blue, Yellow, Red, and White. The Inverter unit winding has terminals for Blue, Yellow, Red, and White.

Power section: This section includes the Battery 12V, Starter motor (load control), Fuel solenoid, Spark plug, Ignition coil, Oil level switch, and Pulsar coil. The Battery 12V is connected to the Starter motor (load control) and the Fuel solenoid. The Starter motor (load control) is connected to the Fuel solenoid. The Fuel solenoid is connected to the Spark plug. The Spark plug is connected to the Ignition coil. The Ignition coil is connected to the Oil level switch. The Oil level switch is connected to the Pulsar coil.

Inverter section: This section includes the Digital igniter, Emergency switch, and Ignition winding. The Digital igniter has terminals for Blue, Yellow, Red, Blue, Yellow, Red, and White. The Emergency switch has terminals for Blue, Yellow, Red, and White. The Ignition winding has terminals for Blue, Yellow, Red, and White.

The diagram shows the electrical connections between these components, including the use of a 12V battery, a 12V DC motor, and a 12V DC inverter. The wiring is color-coded and labeled with component names and terminal numbers.

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Producer:

CHONGQING ZONGSHEN GENERAL POWER MACHINE CO., LTD.

Address: Zongshen Industry Zone, Banan District, Chongqing, 400054, China

Phone: 0086-23-66372525

Hot Line: 0086-4001380026

<http://www.zongshenpower.com>

1476#/V2.1

VARI[®]

Importer and distributor:

VARI, a.s.

Address: Opolanská 350, 289 07 Libice nad Cidlinou, Czech Republic

Phone: +420 325 637 276

E-mail: vari@vari.cz

<https://www.vari.cz>

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